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A SURVEY OF CURRICULUM INNOVATIONS IN THE
HIGH SCHOOLS IN FIFTEEN NORTHWEST
MONTANA COUNTIES

By

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B.S., University of Montana, 1966

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Master of Arts

UNIVERSITY OF MONTANA

1968

Approved by:


Chairman, Board of Examiners


Dean, Graduate School

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Date

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CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

Cultural, social, economic, political and regional changes in present day Montana have significant implications for the educational techniques, and new materials and methods must be put into wise use in the curriculum of each school if it is going to keep up with these changes. The curriculum must not be allowed to become obsolete; it must remain flexible and adaptable to the needs of students in this changing world.

Whether or not these changes are occurring in schools generally, or in Montana for that matter, is debatable. "To describe what has been happening to the schools as revolutionary would be overstating the case," writes Goodlad, "the talk far exceeds the achievement."¹ Nevertheless, many of our schools do differ greatly from what they were, even a decade ago. Curriculum has undergone significant changes and what is being taught and learned in our schools is in the stage of "massive reformation."²

I. THE PROBLEM

Statement of the problem. The purposes of this study were: (1) to attempt to identify curriculum innovations in Montana schools; that

¹John Goodlad, The Changing School Curriculum (New York: The Georgian Press, Inc., 1966), p. 11.

²Ibid.

is, changes which show departure from the "traditional" program; (2) to determine through the judgments of administrators: (a) which innovations have been most effective, (b) the methods used to implement these, (c) the number of students involved in top-rated innovations, (d) the extent to which teachers were involved in planning and implementing the innovations, and (e) the persons responsible for evaluating the innovations; and (3) where possible to personally observe and describe certain innovations which seemed to the writer to show particular promise.

As will be shown later, the identification and extent of implementation of innovations was sought by means of a questionnaire sent to high school principals; the effort to observe and roughly appraise certain innovations was accomplished through visits of the researcher to the selected schools.

Importance of the study. In describing the relationship between world happenings, curriculum changes, and the need for examination of our curriculum in the public schools, Goodlad says:

The launching of the first Russian satellite must be acknowledged as a direct cause of vastly accelerated curriculum revision, notably in mathematics, physical sciences and foreign languages.³

He notes further that much of what was taught in the secondary schools in the 1950's was "out of date,"⁴ and he suggests that:

³Ibid.

⁴Ibid.

Layers of minor revisions had been pasted upon previous layers of minor revisions until school subjects had lost much of the coherence and identity they once possessed.⁵

The beginnings of the current curriculum reform can be traced to the years immediately following World War II. The young men recruited for military service exhibited gross inadequacies in science and mathematics. As this situation became increasingly obvious, scientists began to feel their responsibility toward the problem. Their subsequent involvement in pre-collegiate curriculum reform has been a major factor and a significant characteristic of the movement. Examples of the interest taken by these scientists can be seen by the influence they have had in formulating courses of study in the various fields of science, though the changes were not confined to this field. Carlson says,

There are, for example, at least ten national projects in science, eleven in mathematics, one in English, two in foreign languages and four in social sciences that are currently preparing curriculum materials and testing them in the schools.⁶

With new communities springing up, many changes were bound to take place. Jobs began to take young couples away from familiar surroundings to face challenges they had not faced before. New kinds of unemployment appeared. Unemployment increased in the midst of plenty because of job obsolescence. People were beginning to realize that a fast-changing culture demanded both adaptability and a rational approach to new problems. The old ways of the school would no longer suffice. To cope with

⁵Ibid.

⁶Richard O. Carlson, "Barriers to Change in Public Schools," Change Processes in the Public Schools (Eugene, Oregon: University of Oregon, 1965), The Center for Advanced Study of Educational Administration. p. 3.

the explosion of knowledge, the curriculum needed "fresh infusions of content" and a "comprehensive reorganization."⁷ As stated by Allen in his foreword to the 1961 Catalog of Educational Change:

We need to consider how best to bring total educational resources of the state in a massive attack on resistance, lethargy, and blocks to constructive change.⁸

This study will attempt to reach this goal in at least some small degree, by identifying, classifying, and studying some of the curriculum innovations now in use in the schools of Montana.

The first step in bringing about changes in any institution is to determine how much change is already in existence, and the extent to which this change has been effective. This will be the objective of this study.

Limitations. There are, of course, limitations that must be considered whenever a questionnaire is used. (1) It may be that questions have not been answered truthfully and honestly. (2) The possibility that the labels attached to new programs may conceal more than they reveal (one man's "team teaching" may be another man's "large group instruction"), must be taken into account. (3) Administrators may find it hard to know what features of the program in his school are really innovative. (4) The questionnaire may not really reveal enough information about an innovation to make an adequate description possible. The researcher recognized that personal observation would permit more valid data and

⁷Goodlad, op. cit., p. 13.

⁸Henry M. Brickell, 1961 Catalog of Educational Change (Albany, New York: State Education Department, 1961), p. 9.

judgments, but time and financial resources prevented this method being employed.

Delimitations. This study involves only those secondary schools in the following northwest Montana counties: Ravalli, Granite, Powell, Lewis and Clark, Teton, Pondera, Liberty, Toole, Glacier, Flathead, Lincoln, Sanders, Lake, Missoula, and Mineral.

II. DEFINITION OF TERMS USED

Since a study of this type is bound to deal with terms which must have the same meaning to the reader as to the researcher, an effort will be made to delineate the meanings of a number of terms used in the questionnaire.

Innovation. For the purpose of this study innovation is broadly defined as any non-traditional practice, course, approach to a course, or marked change in course content which has been added to a school's curriculum within the past few years (4 to 6).

Definitions of specific innovations about which inquiry was made follows.

BSCS Biology. This refers to the Biological Sciences Curriculum Study, organized in 1959 by the Educational Committee of the American Institute of Biological Sciences, with headquarters at the University of Colorado. Activities of this committee have been supported by \$8 million of National Science Foundation funds, with international aspects of the program receiving amounts also from the Rockefeller and Asia Foundations.

The BSCS courses differ from the traditional biology courses in that they place greater emphasis on molecular and cellular biology, on the community and world biome, and on the study of populations. Investigation and principles are stressed, as are the universal rather than the applied aspects of biology. In addition, students spend much more time in the laboratory for exploratory and investigative experiments than they do in the typical lecture-recitation situation.⁹

PSSC Physics. PSSC refers to the Physical Science Study Committee which developed a new and different first physics course for high-school students, a course which has served as a pioneer in reformation of the physics curriculum. It results in the involvement of scholars and teachers in the search for fundamental concepts, in the development of audio-visual aids, and in the packaging of a total instructional program in this field. The committee's initial activity centered at the Massachusetts Institute of Technology, and later led to the formation of Educational Services, Inc. at Newton, Massachusetts. The PSSC physics program began operation during the 1957-58 school year with eight teachers and 300 students; by 1965-66 approximately fifty per cent of all secondary students enrolled in physics classes in the United States were involved in the program.¹⁰

A central component of the course is the laboratory in which students gain first hand experience in discovering and verifying physical

⁹Goodlad, op. cit., p. 41.

¹⁰Ibid., p. 41.

phenomena. . . . Students count, measure, observe; they learn about, construct, and test conceptual models; and finally they arrive at a reasonable sophisticated model of atoms. They come to see that physics is not fixed or static but that it evolves from the inquiries and basic research of scientists.¹¹

CHEM Study. The Chemical Education Material Study group was a committee appointed by the American Chemical Society to study the need for revising the chemistry course at the high school level. The text developed by this committee was available for the 1963-64 school year, and by the school year 1965-66 approximately 350,000 students in the United States were using CHEM Study materials.

The course begins with an overview of chemistry, emphasizing the atomic-molecular nature of substances. Students are introduced to the periodic table, how it is used, and how it is devised. The course then moves into energy, reaction rates, equilibrium, acids and bases, and oxidation-reduction. Later, bonding and structural relationships in various states of matter, together with their influence on chemical reactivity are studied. The course concludes with an introduction to organic and descriptive chemistry, with application of principles covered earlier.

CHEM Study relies heavily on experimentation in the laboratory; however, in contrast to the Chemical Bond Approach, CHEM Study builds the laboratory right into the sequence of the text. Chemical reactions that cannot be done in a classroom laboratory are presented in a series

¹¹Ibid., p. 41.

of films and, like laboratory activity, these films are designed to be shown at specific times during the course.¹²

CBA Chemistry. CBA stands for Chemical Bond Approach, which was organized under the support of the National Science Foundation in 1957 by a group of chemists at Reed College, Portland, Oregon.

The Chemical Bond Approach Project is an attempt to develop an introductory chemistry course which presents modern chemistry to beginning students. The presentation is intended to give students a preliminary understanding of what chemistry is about, rather than simply an encyclopedia collection of chemical reactions and laboratory techniques, or a mere overview of diverse conclusions held by chemists today. Such a course must be an organized one in which the pattern reflects the structure of the discipline itself. Since conceptual schemes play a major role in the organization of chemistry today, the organization of the course in chemistry is best based on conceptual schemes.¹³

Team or cooperative teaching. This can be defined as two or more teachers sharing the responsibilities for instructing certain classes or groups. Those teachers working as a team must have assigned classes during the same period and they must share common planning periods. Team teaching enables two or more teachers to pool their knowledge and talents in teaching a larger number of students than is usually possible in the conventionally organized school. It also facilitates individual help and small group instruction when needed.¹⁴

¹²Ibid., p. 46.

¹³Laurence E. Strong, "Facts, Students, Ideas," Journal of Chemistry Education, 39 (March 1962), p. 126.

¹⁴E. Dale Davis, Focus on Secondary Education, An Introduction to Principals and Practices (Glenview, Illinois: Scott, Foresman and Co., 1966), p.184.

Teacher aides. Of considerable importance has been the employment of laymen to help with teaching by filling roles as clerks and assistants to help with routine jobs in order to relieve the burden on teachers and make available more time for teacher preparation. People are being hired to count activity tickets, move movie projectors around the school, police halls and lunch rooms, and perform other non-professional duties in which teachers have previously been involved.

Advanced placement. This is a program which permits the high schools to organize and teach college-level courses for students of unusual ability. With the cooperation of selected high schools, colleges, and the College Entrance Examination Board (CEEB), students are given an opportunity to complete some of their college work while still in high school.¹⁶

Essentially, it is another means for providing for individual differences, in this case by allowing bright students to take courses which challenge their intellectual abilities.¹⁷

Programmed learning. This refers to a self-teaching approach where subject matter to be studied is broken down into small, discrete, logical steps, or frames. Each frame consists of three parts known as

¹⁵William N. Alexander (ed.), Melvin W. Barnes, "More Time to Teach," The Changing Secondary School Curriculum, Readings (New York: Holt, Rinehart and Winston, Inc., 1967), p. 271.

¹⁶William N. Alexander (ed.), E. M. Gerritz and C. Robert Haywood, "Advanced Placement," The Changing Secondary School Curriculum, Readings, (New York: Holt, Rinehart and Winston, Inc., 1967), p. 312.

¹⁷Ibid.

the stimulus, the response, and the confirmation. The stimulus is made up of a small bit of information, followed by a question to be answered or a blank to be filled. The last part of the frame contains the correct answers, against which the student checks his own response. This can be accomplished either with machines or with the use of specially designed textbooks.¹⁸

Multi-track. The track system provides a division of students and their curricula into special patterns or tracks with separate organizations of courses for students of below-average ability, superior students, and average students.¹⁹

Separate schools. This innovation refers to specialized schools, i.e., technical, general, college-preparatory.²⁰ In this study, however, it is assumed that those separate schools mentioned will be of a vocational education type.

Carrels. A study carrel provides a semiprivate or private facility for students to use book materials and related items for study purposes.²¹

¹⁸Davis, op. cit., pp. 186-192.

¹⁹Ibid., p. 151.

²⁰Ibid., pp. 152-158.

²¹Philip Lewis, "Study Carrels Sprout in all Parts of the School," Nation's Schools, Vol. 77, No. 6 (June, 1966), pp. 82-84.

Continuous progress. As defined by Carter Good, this is the process of continual progression from one stage of difficulty to the next. He describes this as:

A theory or practice of providing an ungraded curriculum and interage groupings within which individual promotions in schools are based on a whole matrix of factors such as physical, emotional, social factors as well as on intellectual, chronological, and achievement changes.²²

Block. Good states that, block teaching is:

A term applied to a type of school organization in which one teacher is responsible for the learning activities of a group of students for two or more hours during each day, as contrasted with a teacher per-period schedule.²³

Research and developmental specialist. In this paper it is understood that a person filling this description would be an expert in the field of curriculum development and change. Such a specialist has the following characteristics:

A person who has studied and worked intensively in one field of knowledge and supposedly has thus attained a high degree of understanding and proficiency.²⁴

Modular scheduling. Trump defines modular scheduling in the following terms:

A school day may be divided into fifteen or twenty minute modules, and different classes may meet for a varied number of modules -- one,

²²Carter V. Good, Dictionary of Education (New York: McGraw-Hill Book Company, Inc., 1959), p. 423.

²³Ibid., p. 479.

²⁴Ibid., p. 515.

two, three, five or any number desired depending upon the purpose of the class. Under the module system, the schedule may also provide that a class meet on certain specified days of the week instead of every day.²⁵

Drop-a-day, extended day-week-school year. Trump and Baynham suggest that:

The purpose of schedule modification is to make it more flexible so that students and teachers can break out of the conventional, standard-size period, five days a week, each period slated for a self-contained classroom.

They note that there are many ways in which this can be realized. One plan is:

. . . To leave open one or two periods near the middle of the school day, with no regularly scheduled classes. During this time, students can be scheduled for a variety of activities, large group instruction, small group discussion, laboratory work and work in other areas, or independent study--without conflicting with regular classes which are scheduled during other periods of the school day.

A more radical type of modification of scheduling is also described by Trump and Baynham. They suggest that by

. . . scheduling classes for four days a week, rather than five, one full day a week can be kept free of regular classes. A regularly scheduled day, preferably, Wednesday, can be used for classes of varied sizes, for independent study, and for other learning activities so that they will not conflict with conventional classes.²⁶

III. ORGANIZATION OF REMAINDER OF THESIS

In Chapter II, related literature on innovations will be discussed; in Chapter III, related studies will be reviewed; in Chapter IV the

²⁵J. Lloyd Trump and Dorsey Baynham, Focus on Change: Guide to Better Schools (Chicago: Rand McNally and Co., 1961), pp. 117-118.

²⁶Ibid.

procedures and mechanics of the survey of the fifteen western counties involved in the survey will be described; in Chapter V the results and evaluations as determined from the information obtained from the survey will be presented. A summary of this study and its findings will be covered in Chapter VI, as will also recommendations for further study.

CHAPTER II

REVIEW OF THE LITERATURE ON INNOVATIONS

I. IMPORTANCE OF AND CHARACTERISTICS OF INNOVATIONS

Along with the brief and rather inclusive definition of innovation given in Chapter I, an expansion of the term will be attempted at this point in order to help the reader understand this chapter and the remainder of the thesis. An innovation seems to have "two subcomponents."¹

First, there is the idea or item which is novel to a particular individual or group and, second, there is the change which results from the adoption of the object or idea.²

The idea that the speed of adoption of an innovation is related to its direct usefulness to society as a whole is a notion which must be questioned. The example of the acceptance or rejection by many persons of fluoridation of their water supply for the prevention of dental decay is a case in point. Evans,³ quotes Miles (1964) as saying: "educational innovations are almost never installed on their merits."

Considerable evidence indicates that the nearly revolutionary changes in our educational system lack planning, integration, and most of all, evaluation.⁴

¹Richard I. Evans, Resistance to Innovation in Higher Education, (San Francisco: Jasssey-Bass Inc., 1968), p. 15.

²Ibid., p. 16.

³Ibid.

⁴Ibid., p. 3.

By means of an examination of what is happening during this period of time called the Twentieth Century and looking forward to the Twenty-first Century an idea of why change is important can be gained. An example from a geologist's concept of time should make this quite apparent. A geologist in treating the age of the earth as if it were a single year would, by placing various events in earth history on calendar days, come up with something like this:

On New Year's Day the earth coalesces out of a ball of something. The first rocks solidify, in pre-Cambrian formations that we see at the bottom of the Grand Canyon, about Independence Day. The first life appears about Thanksgiving. The evolution of the forebears of man--approximately a million years ago--comes on December 31 at about 10:00 P.M., two hours before midnight. The earliest civilizations--Sumerian and Egyptian appear on December 31 at 11:59:18, forty-two seconds before midnight. The birth of Christ occurs at 11:59:46. Only fourteen seconds to go. The Industrial Revolution comes at 11:59:58.5. The modern age, which we would say is within the twentieth century opens at 11:59:59.6, with only four-tenths of a second left. And the last decade--the period in which scientists tell us they have learned something like half of all they know begins at 11:59:59.93, only seven one-hundredths of one second before midnight.

And scientists now say that in the next seven one-hundredths of one second we will again double all we know.⁵

Clearly this explosion of knowledge must be handled in some way, and the only way possible is through improvement of the existing educational channels and actual adoption of workable innovations.

In the discussion of innovations within the state of Montana a certain understanding of the state and the western region of the United

⁵James E. Russell, Change and Challenge in American Education, (Boston: Houghton-Mifflin Company, 1965), p. 77.

States is necessary, for we know that education stems from the society that nurtures it.

Geographically Montana is somewhat isolated. The state's major means of communication seem to be orientated from east-to-west, with minor north-south interaction. Seasonal weather further restricts person-to-person communication, and the factor of great distances and sparsity of population must be recognized when a study of the region is undertaken.

Socially, the area under consideration is rather homogeneous in terms of population make up. The trend to react in a rather conservative manner whether it be a discussion of politics or fashion in clothes is evident. The religious forces, in the main, follow this conservative mode, and tend to neutralize many liberal actions occurring elsewhere in the nation.

Economically this area is just beginning to develop from an agrarian society into a more industrialized type but this change, although evident, is slow in its development.

Educationally, there appear to be no school systems, or clusters of school systems that seem to be outstanding or, as Orlich refers to them, "light house districts."⁶ There are, however, districts which have contributed greatly to public education.

⁶Edgar L. Morphet and Charles O. Ryan (eds.), Donald C. Orlich, "Supplementary Statement," Planning and Effecting Needed Changes in Education, (Denver: Publishers Press, Inc., 1967), p. 82.

State departments of education in the Rocky Mountain Region cannot be classified as leaders or instigators of innovations on a national level. Most innovations have been developed and tested in states in other areas of the country.⁷

Despite the specific problems faced by this northwestern state, it seems obvious that education must change--must keep up. Tyler notes that:

The goals of education appropriate for a future that will include many surprises will include strong emphasis upon problem solving, upon learning how to meet new situations, upon the skills of observation, analysis and communication, and upon the development of attitudes appropriate to change.⁸

The growth of knowledge during the past 300 years has been significant in the history of man. It is this explosion of knowledge--"probably three-fourths of the knowledge now available to man was not known at the close of World War II,"⁹ --that has in the past several years impeded the efforts of educators to provide students with a comprehensive knowledge of the major fields of study. Thus, as Tyler says:

. . . if giving students specific knowledge while in school is a major objective, each student's supply as received while in school, will be largely obsolete by the time he is 35.¹⁰

⁷Ibid., p. 83.

⁸Edgar L. Morphet and Charles O. Ryan (eds.), Ralph W. Tyler, "Purposes, Scope and Organization of Education," Implications for Education of Prospective Changes in Society, (Denver: Gradford-Robinson Co., 1967), p. 36.

⁹Ibid.

¹⁰Ibid.

To supply the future citizens of the country with a most basic education for meaningful life in the future, our schools must be in a constant process of meaningful change.

II. RESISTANCE TO INNOVATIONS

Since this study is concerned, not only with the existence of innovations, but with how they are adopted, the matter of resistance to change will be briefly treated.

A number of studies have been done on the rate of educational change. Brickell found that the rate of instructional innovations in schools in New York state more than doubled within fifteen months after the launching of Sputnik I in October, 1957.¹¹

Both Carlson and Rogers have drawn some generalizations between innovators and non-innovators:

A comparison of scores achieved by innovators and all those who had an equal chance to be innovators indicated a tendency for innovators to: (1) be younger, (2) know well fewer of their peers, (3) be sought less often for advice, (4) receive higher professional ratings, (5) exhibit greater accuracy in the judgment of their rates of adoption of innovations, (6) have shorter tenure in their present positions, and (7) seek advice and information from more persons outside the local area.¹²

Carlson and Rogers have also defined five characteristics of innovations which play at least some role in their rate of adoption:

¹¹Henry M. Brickell, 1961 Catalog of Educational Change (Albany, New York: State Education Department, 1961), p. 18.

¹²Richard O. Carlson, Adoption of Educational Innovations (Eugene, Oregon: University of Oregon Press, 1965), p. 65.

(1) Relative advantage is the degree to which an innovation is superior to ideas it supersedes. (2) Compatibility is the degree to which an innovation is consistent with existing values and past experience of the adopters. (3) Complexity is the degree to which an innovation is relatively difficult to use. (4) Divisibility is the degree to which an innovation may be tried on a limited basis. (5) Communicability is the degree to which the results of an innovation may be diffused to others.¹³

Although these characteristic factors of innovations do play a part in the rate of their adoption, Carlson found them to be only partially accounted for by the varying rates of diffusion which suggests that there are many factors which must be considered when adoption of new ideas is considered.

The pace of educational innovation and adoption depends to no small degree upon our ability to influence practitioners to modify their perceptions of reality and accompany this with performance keyed to the changed view.¹⁴

Changes taking place today in education can be classified conveniently along the lines Howsam suggests:

(1) Organization for instruction and for administration (team teaching; dual progress; K-4-4-4, etc.); (2) educational technology with major emphasis on hardware (computer assisted instruction, educational television, etc.) and (3) subject matter content in various curriculum areas (new math, new physics, new biology, etc.).¹⁵

Far less has been done to lay the groundwork for the needed changes in teacher behavior and instructional methodology without which the changes are not likely to succeed. There is ample evidence from studies

¹³Ibid., p. 70.

¹⁴Edgar L. Morphet and Charles O. Ryan (eds.), Robert B. Howsam, "Effecting Needed Changes in Education," Planning and Effecting Needed Changes in Education (Denver: Publishers Press, Inc., 1967), p. 65.

¹⁵Ibid.

that people tend to subvert the intentions of innovators by twisting the expected new behaviors into old and more comfortable ways. Carlson has observed this practice and he reports that: "teachers modify new procedures to maintain older patterns of teaching."¹⁶ After the innovation has been introduced, one of its greatest resisters is actually the teacher involved. Because change for teachers is often times difficult, and occurs under only the most favorable of conditions, many potential advantages of innovative developments may be lost. Although there is no body of evidence to support the view, it can be hypothesized that teachers at all levels, perhaps more than any other professional group in the society, need sophisticated in-service education as a preparation for a proposed innovation.¹⁷

Carlson sees three barriers to change that are basic and must be corrected to achieve change to any satisfactory degree: "(1) The absence of a change agent, (2) a weak knowledge base, (3) domestication of public schools."¹⁸

Thus, in spite of much current activity in curriculum and change in the schools there is wide spread pessimism about the public schools' ability to make rapid and adequate adaptation to our fast changing times.¹⁹

¹⁶Carlson, op. cit., p. 65.

¹⁷Howsam, op. cit., p. 67.

¹⁸Richard O. Carlson, "Barriers to Change in Public Schools," Change Processes in Public Schools (Eugene, Oregon: University of Oregon, 1965), The Center for Advanced Study of Educational Administration, p. 3.

¹⁹Ibid.

Mort emphasized the relative slowness with which educational practices were adopted by school systems:

Education has not been sufficiently adaptable to adaptability. The rate of adjustment of schools to scientific advancement and social change indicate that in the past, our system as it has operated, a period of fifty years between the recognition of a need and the first introduction of an invention has not been unusual.²⁰

Why is this the case? The speed at which medicine and agriculture, for example, change is much greater than that of education. Is the reason that the practice of education is so advanced and the practice of medicine and farming so primitive sufficient to explain the diverse rates of adaptability?²¹

A return to Carlson's three barriers to change will help to clarify the situation. Carlson defines a "change agent" as one who:

Attempts to influence the adoption decisions in a direction he feels is desirable. He is a professional who has as his major function the advocacy and introduction of innovations into practice.²²

Who is the person or agency which performs this role in education? One would think this function might rest with the state department of education or the county school superintendent. But these offices, as suggested by Carlson, have as their major function, regulation.²³ While some county and state departments encourage or at least do not block change, their chief function is to make certain that a minimum program of education is maintained in the schools within their jurisdiction.

²⁰Paul R. Mort, Principals of School Administration (New York: McGraw-Hill Book Co., 1946), pp. 199-200.

²¹Carlson, op. cit., p. 3.

²²Ibid., p. 4.

²³Ibid.

If this function is not in operation at the state or county levels, it would appear to lie within the local school district unit. However, it seems doubtful that most school districts expect the superintendent to accept as his major function, the study and adoption of change. It is possible that a change agent as such simply doesn't exist in our public schools in many parts of the country. In Montana few school systems have even a curriculum coordinator whose special function is to serve as a leader in introducing or pushing toward change. Because of this absence of a change agent, change is likely to come slowly.

As a second factor which affects the adoption of innovations, Carlson discusses what he calls a "weak knowledge base." Along with the absence of any real change agent the schools are further handicapped in possible change activities by the weakness of "the knowledge base about new educational practices."²⁴ The school superintendent or principal who is seldom selected as qualified to be the change agent within his school system is faced with a challenging problem. Nor does he ordinarily have the necessary research "know how" to evaluate possible changes. Carlson says:

It is rare indeed when an educational innovation is backed by solid research. It is even rarer to find an educational innovation which has been fully developed and subject to careful trial and experimentation. Thus, the school superintendent as a change agent must ordinarily do not only the work of the county extension agent (the agricultural farming specialist) but also the work of the agricultural experimental station.²⁵

²⁴Ibid., p. 5.

²⁵Ibid.

This phase of the three barriers to change, however, may have a brighter future especially for the school administrator. The federal government within the past few years has established several large educational research and development centers located at universities (e.g., at the Universities of Oregon, Pittsburgh, Wisconsin and Harvard). Other educational laboratories have been established independent of universities: (e.g., the Northwest Regional Educational Laboratory at Portland, Oregon, and the Rocky Mountain Educational Laboratory at Greeley, Colorado) with more to be established later.²⁶

These centers have high potential and, given time to get into full operation, should have a large influence on public education. They should give school administrators a knowledge base about educational practices that is as firm as that from which the county agent operates.²⁷

The third and final barrier to adoption as developed by Carlson has to do with the "domestication" of the public schools. He refers to this factor as:

...the organizational characteristics of schools and specifically with the relationship between the school as an organization and its clients.²⁸

The public schools in this country have for some time provided compulsory education up to a certain age. The public school cannot select its clients, and the clients are not really free to accept or reject the service of the school, but must accept the service. The

²⁶Ibid.

²⁷Ibid., p. 6.

²⁸Ibid.

label of "domesticated organization"²⁹ is given by Carlson with the implication that clients who are involved in an organization like the school, where the school cannot select the clients and the client must accept the service are:

... protected and cared for in a fashion similar to that of a domesticated animal. . . . these organizations are domesticated in the sense that they are protected by the society they serve. The society sees the protection of these domesticated organizations as necessary to the maintenance of the social system and creates laws over and above those applying to organized action in general to care for these organizations.

The consequence of domesticating organizations, as far as organizational change is concerned, is to restrict the need for, and interest in, change, because the environment of the domesticated organization in many important respects is more stable than it is in other types of organizations. When important elements of the environment are stable, the necessity for change is reduced.³⁰

III. WHO ARE INNOVATORS AND WHAT ARE THEY LIKE?

As seen earlier from the studies of both Rogers and Carlson, innovators have the tendency to follow seven characteristics. Whatever an innovator is called, whether it be a Pioneer, Advanced Scout, Experimenter, etc., there is a desirable standard definition of what an innovator really is. Rogers suggests categorizing innovators as the first "2.5 per cent of an audience to adopt a new idea."³¹

²⁹Ibid.

³⁰Ibid., p. 7.

³¹Everett M. Rogers and others, "What Are Innovators Like?," Change Processes in the Public Schools (Eugene, Oregon: University of Oregon, 1965), The Center For the Advanced Study of Educational Administration, p. 56.

The rate of adoption varies widely in terms of years as pointed out earlier by the findings of Mort. However, contrary to the evidence produced by Mort, some innovations today have spread more rapidly.

Allen compared the diffusion of driver training, an innovation promoted by safety groups and car dealers, with the idea of pupils studying their community. Sixty years were required for this idea to reach 90 per cent adoption among 168 U. S. schools while only 18 years were needed for driver training to reach this level of adoption.³²

Carlson found a similar fast diffusing subject in "modern math."

Modern math only required five years to reach about 90 per cent adoption by 43 school superintendents in Allegheny County, Pennsylvania.³³

But who is the innovator? What personality characteristics does he share with other innovators? What are his values, attitudes, and reference groups?

In a study of the agricultural innovators in Ohio, Rogers found statements innovative farmers made on what their neighbors thought of their farming methods, to follow these lines:

Some think that we are a little cracked.
Sometimes they shake their heads.
Fifty per cent think I am crazy, the other fifty per cent are sure I am.³⁴

Thus, as Rogers points out in a different study, "Thoreau might observe, innovators are in step with a different drummer than their peers; they march to different music."³⁵

³²Ibid., p. 57.

³³Carlson, Adoption of Educational Innovations, op. cit., p. 53.

³⁴Everett M. Rogers, "Characteristics of Agricultural Innovators and Other Adopter Categories," Studies of Innovation and of Communication to the Public (Stanford, California: Institute for Communication Research, 1962), p. 91.

³⁵Rogers, "What Are Innovators Like," op. cit., p. 59.

In a third source Rogers sets forth a composite picture of the innovator, and this is admittedly an "ideal type":

Observers have noted that venturesomeness is almost an obsession with innovators. They are eager to try new ideas. This interest leads them out of a local circle of peers and into more cosmopolite social relationships. Communication patterns and friendships among a clique of innovators are common even though the geographical distance between the innovators may be great. They travel in a circle of venturesomeness, like circuit riders who spread new ideas as their gospel. Being an innovator has several prerequisites. They include control of substantial financial resources to absorb the loss of an unprofitable innovation and the ability to understand and apply complex technical knowledge. The major value of the innovator is venturesomeness. He must desire the hazardous, the rash, the daring and the risking.³⁶

IV. EVALUATION OF INNOVATIONS

What is a good innovation or a poor one? What criteria may be used to evaluate a change in the curriculum? To change just to be changing makes no sense. The "keeping up with the Jones's" is useless, unless the Jones's are doing something which is worth while and which is worth taking a good look at, and perhaps worth trying.

In many cases pupil reaction is usually considered as sufficient criterion for the evaluation of instructional innovations. To the practitioner, no other evidence outweighs student reaction as a measure of success. Rarely are more complex evaluative techniques used.³⁷

³⁶Everett M. Rogers, Diffusion of Innovation (New York: Free Press, 1962), p. 169.

³⁷William N. Alexander (ed.), Henry M. Brickell, "The Dynamics of Educational Change," The Changing Secondary School Curriculum, Readings (New York: Holt, Rinehart and Winston, 1967), p. 439.

Brickell found that almost everything new seemed to work better. "Instructional changes are nearly always reported as resulting in improvement."³⁸

For a program of educational change to be regarded as successful, Trump points to the fact that the following three basic questions must be answered in the affirmative:

Have the students learned more under the changed program than under conventional procedures?

Has the job satisfaction of the teachers been raised significantly?

Are the changed procedures logistically and financially feasible?³⁹

The ideal conditions under which an instructional innovation should be evaluated are given by Brickell:

The ideal circumstances for the evaluation of a new instructional approach are controlled, closely observed, and unfree. At their best, they provide conditions in which the forces that might influence the success of the new approach can be controlled when possible and kept under close surveillance when actual control is impossible. The freedom which is essential in searching for a good design is destructive in making a good evaluation.⁴⁰

This researcher's plan for evaluating promising innovations merely through short visitations could scarcely be taken as scientific evaluation, using any of these criteria. He felt, however, that a "look" at what was called an innovative practice would be informative to him, and perhaps helpful in bringing out the difficulty of sound appraisal of innovations in schools.

³⁸Ibid.

³⁹J. Lloyd Trump and Dorsey Baynham, Focus on Change: Guide to Better Schools (Chicago: Rand McNally and Co., 1961), p. 127.

⁴⁰Brickell, op. cit., p. 443.

CHAPTER III

REVIEW OF RELATED STUDIES

An exhaustive search was made for studies which paralleled this one. Several were found which provided some help; one was in many ways comparable to this study.

Mort¹ has shown the effect on curriculum by isolation of variables, usually relating to economic factors of the school district, ranging from expenditure per pupil to teachers' salaries. In short his findings suggest that the school systems that are first to adopt educational innovations spend the most money per child and those last to adopt educational innovations spend the least amount per child.

Carlson² found, in contradiction to these findings of Mort, that in Allegheny County, Pennsylvania, educational practices such as team teaching, modern math, foreign language instruction, programmed instruction, ungraded primary classes, and accelerated programs in high schools had a negative, insignificant correlation in terms of the amount of money spent per child. He suggests that the amount of money spent per child had no predictive power in relation to the rate of adoption of these innovations. He also found this to be true in West Virginia, a state where the expenditure level per child is considerably lower than

¹Paul R. Mort, Principals of School Administration (New York: McGraw-Hill Book Co., 1946), p. 240.

²Richard O. Carlson, Adoption of Educational Innovations (Eugene, Oregon: University of Oregon Press, 1965), p. 65.

that in western Pennsylvania. These findings showed no material difference in the rates of adoptions of these innovations between these two regions of the country.

Brickell³ found, as mentioned earlier, after taking an inventory of instructional innovations in New York State, that the rate of introduction of innovations more than doubled within fifteen months after the launching of Sputnik I in October 1957. He suggests that in order to deal effectively with the changing school practices, three distinct and separate units must be established under the control of the Commissioner of Education of New York. One unit should have the primary objective of a design unit where ideas are generated. The second unit should control the task of evaluating the ideas coming from the design unit. The third unit should have the function of the development and dissemination of the practices which emanate from the previous two units or agencies.

The North Central Association (NCA), in 1967 undertook a project, the purpose of which was to try to determine the extent to which 27 selected innovations were used in high schools throughout the United States.

It was found that the typical high school reporting in this survey used only six of the twenty-seven innovations (see Table III, page 34) listed by the NCA.⁴ The findings indicate further that innovation

³Henry M. Brickell, Organizing New York State for Educational Change (Albany, New York: State Department of Education, 1961), p.2.

⁴Gordon Cawelti, "Innovative Practices in High Schools: Who Does What and Why and How," Reprinted from Nations Schools (New York: McGraw-Hill Book Co., April 1967).

adoption and abandonment rates seem to follow certain broad patterns.

(1) In opposition to findings of Mort⁵ and his students, the NCA found the diffusion rate for acceptance to be more rapid in secondary schools today than it was previously. As stated by Cawelti, "American education has moved from a crawl to a walk."⁶

(2) The findings of Carlson⁷ on financial support and rate of adoption, as mentioned earlier, were also supported to some degree by this study.

Cost appears to be a retarding factor in many cases. But other evidence on innovation suggests that perhaps spending slightly more for certain kinds of administrators--concerned with several innovations or at least one--can produce change when fund restrictions are a factor.⁸

Much material has been written on curriculum innovation, technology, and organization. But in actuality very little is known about the effects of different treatments or strategies of learning over an adequate period of time.

The function of a change agent as suggested by Carlson⁹ was also confirmed by the findings of the NCA Study; i.e., ". . . there are relatively few authentic inventors in the school field."¹⁰

⁵Mort, op. cit.

⁶Cawelti, op. cit.

⁷Carlson, op. cit.

⁸Cawelti, op. cit.

⁹Carlson, op. cit.

¹⁰Cawelti, op. cit.

Innovations that have received the widest acceptance and most popularity have been those in the fields of science and mathematics.

The most popular curricular practices are the use of the CHEM Study, SMSG Mathematics, and the PSSC Physics materials. With the exception of language laboratories, there appears to be limited utilization of newer advancements in educational technology. In organization, the most frequently reported innovations are team teaching, employment of teacher aides or paraprofessionals, and college credit courses.¹¹

The need for careful planning before adoption of an innovation, and also careful attention during the early years of an innovation adoption are of utmost importance to keep the rates of abandonment down.¹²

According to the definition of innovation as used by the NCA in their study on curriculum innovation the following practices were considered to be no longer innovative: PSSC Physics, CHEM Study, BSCS Biology, programmed instruction, language laboratory, data-processing equipment (for scheduling, accounting and so forth), team teaching, college credit courses in high school, teacher aides, work study program, student exchange and cultural enrichment programs.¹³ However, in this Montana study these were considered to be innovative because they were generally adopted within the past few years.

Some of the direct implications of the NCA Study to this study of innovation in Montana schools can be seen from data taken from tables prepared for that Study.

¹¹Ibid.

¹²Ibid.

¹³Ibid.

The findings of the NCA suggest that the size of school enrollment has some bearing on the average number of innovations a school of a certain size uses. As can be seen by Table I below, as a school's enrollment increases the average number of innovations tend to increase.

TABLE I

AVERAGE NUMBER OF INNOVATIONS PER SCHOOL--BY ENROLLMENT*

Enrollment	Average
Less than 200	5.6
200-499	5.5
500-1,499	6.1
1,500-2,499	7.2
More than 2,500	7.6

(Based on 27 innovations used in the survey)

*Gordon Cawelti, "Innovative Practices in High Schools: Who Does What and Why and How," Reprinted from Nations Schools, April, 1967.

In a similar manner the size of the area served seems to have some effect on the average number of innovations being used. Table II, page 33, suggests that, although the differences are not great, there is a noticeable difference in the transition from the small town under 500 to the large urban centers and suburban areas of the country so far as the average number of innovations is concerned.

TABLE II

AVERAGE NUMBER OF INNOVATIONS PER SCHOOL--AREA SERVED*

Area Served	Average
City of more than 400,000	6.6
Community of 5,000-399,999 (not suburban)	6.3
Suburban--within urban fringe of central city	6.7
Small town of under 500	5.5
Rural	5.5

(Based on 27 innovations used in the survey)

*Gordon Cawelti, "Innovative Practices in High Schools: Who Does What and Why and How," Reprinted from Nations Schools, April, 1967.

As shown earlier, six out of the twenty-seven innovations selected by NCA for study indicate the national average of innovations practiced in schools throughout the nation. Study of Table III, page 34, will provide some interesting comparisons of the states in the nation and the number of innovations on the average that are in use in each state.

TABLE III
AVERAGE NUMBER OF INNOVATIONS, BY STATE*

State	Average	State	Average	State	Average
Alabama	4.8	Louisiana	3.5	Oklahoma	4.9
Alaska	6.9	Maine	5.0	Oregon	6.8
Arkansas	3.3	Maryland	7.0	Pennsylvania	6.9
Arizona	5.5	Massachusetts	7.7	Rhode Island	8.2
California	7.8	Michigan	6.7	S. Carolina	5.6
Colorado	6.9	Minnesota	7.3	S. Dakota	3.4
Connecticut	8.6	Mississippi	4.2	Tennessee	5.6
Delaware	7.9	Missouri	5.7	Texas	5.6
Dist. of Col.	6.7	Montana	4.9	Utah	7.2
Florida	6.8	Nebraska	5.0	Vermont	5.5
Georgia	5.3	Nevada	6.8	Virginia	6.6
Hawaii	7.5	N. Hampshire	6.5	Washington	7.8
Idaho	4.5	N. Jersey	7.1	W. Virginia	4.1
Illinois	5.9	N. Mexico	5.1	Wisconsin	6.2
Indiana	5.5	N. York	8.5	Wyoming	6.4
Iowa	4.9	N. Carolina	5.3	Dep. Schools	4.9
Kansas	4.8	N. Dakota	4.5	Extra Terr.	5.9
Kentucky	6.0	Ohio	5.1		

National average for all schools 6.1.
(Based on the 27 innovations used in this survey)

*Gordon Cawelti, "Innovative Practices in High Schools: Who Does What and Why and How," Reprinted from Nations Schools, April, 1967.

Possibly the one most valuable piece of information from this study of the NCA in terms of its direct usefulness to this author's study is the finding the comparison of adoption and abandonment of innovation by Montana high schools in relation to the same data applied to the nation as a whole. (See Table IV.)

TABLE IV
 PERCENTAGE OF SCHOOLS REPORTING ADOPTION AND
 ABANDONMENT OF 27 SELECTED INNOVATIONS*

Innovations	Adoption		Abandonment	
	Montana	U.S.A.	Montana	U.S.A.
<u>Curriculum</u>				
1. PSSC Physics	32	43.2	1.6	3.2
2. CHEM Study Chemistry	27	38.7	1.6	1.6
3. CBA Chemistry	8	9.9	1.6	2.7
4. SMSG Mathematics	24	36.4	1.6	6.1
5. UICSM Mathematics	3	4.5	0.0	1.5
6. ESCP Physical Science	13	9.7	0.0	0.3
7. SSSP Physical Science	6	3.5	0.0	0.1
8. Humanities Course	10	17.7	0.0	0.8
<u>Technology</u>				
9. Television Instruction	5	16.5	1.6	3.8
10. Programmed Instruction	40	28.8	4.8	4.9
11. Teaching Machines	27	12.7	1.6	1.7
12. Language Laboratory	60	71.3	0.0	1.0
13. Data-Processing Equipment	5	28.3	0.0	0.8
14. Telephone Amplifi- cation	3	5.3	0.0	0.3
15. Simulation or Gaming	10	15.4	1.6	0.1
<u>Organization</u>				
16. Flexible Scheduling	18	14.8	1.6	0.8
17. Team Teaching	31	41.0	0.0	4.3
18. College Credit Courses in H. S.	11	28.0	1.6	1.4
19. Nongraded School	3	4.7	0.0	.01
20. Teacher Aides- Paraprofessionals	44	29.1	0.0	1.3
21. Honor Study Halls	23	23.5	11.2	6.0
22. Work-Study Program	29	48.7	1.6	1.6
23. School-Within-a-School	0	2.7	0.0	0.3
24. Cultural Enrichment Programs	35	31.0	0.0	0.3
25. Student Exchange Program	19	36.5	0.0	1.7
26. Optional Class Attendance	0	4.0	0.0	0.3
27. Extended School Year	3	5.1	0.0	0.06

*Gordon Cawelti, "Innovative Practices in High Schools: Who Does What and Why and How," Reprinted from Nations Schools, April, 1967.

CHAPTER IV

PLANNING THE STUDY

Early steps. In 1966 the Curriculum and Educational Development Committee of the Montana Education Association was engaged in a study of curriculum innovations in the twenty-five largest schools in the state. During the school year 1967-68 the Committee decided that this study should be broadened to encompass both large and small school in the state.

At a meeting on September 23, 1967, it was decided that the whole state should be surveyed with respect to "curriculum innovations." The colleges of the state were asked to cooperate through identifying graduate students who would be interested in developing an instrument to be used for the survey and, after it was administered by the Montana Education Association, tabulate the results, and interpret the findings. That this project could be used as topics for theses was thought to provide motivation for their cooperation in the study.

On December 9, 1967, the Curriculum and Educational Development Committee again met, with the following members present: James Wood, Chairman; Francis Olson; Carl Hansen; Patricia Stevens; and Linus Carleton. Maurice J. Hickey, MEA Staff Consultant, Marilyn Lind and Donald Welti, graduate students from the University of Montana, were also present.

The group's primary concern at this time was to draw up guidelines which the instrument would follow to obtain the needed information. The following questions were agreed upon as the basis for drawing up the instrument.

1. What new or additional courses have been added?
2. What innovations have been made in existing courses?
3. What uses are being made of various types of media or para-professionals?
4. What changes are being made in facilities? New construction?
5. Are there any changes in staff preparation to bring about these curriculum changes?
6. Have you changed staff organization in any way that affects the curriculum?
7. What is the future of this program?
8. What are you planning for the future?
9. Would you allow the students to observe your program if it is desired?¹

With these guidelines in mind the students involved were requested to develop an instrument and present it to the Committee on January 20, 1968, for possible revision and final approval.

Development of the instrument. The two students (mentioned above) from the University of Montana then developed an instrument along the lines set forth by the guidelines the Committee had suggested. The students, including the writer of this paper, studied the first instrument (used in 1966) and other similar instruments. One used by the Research and Development Center at the University of Wisconsin to consider the existence and role of the Change Agent Team in the public schools of

¹James Wood, Curriculum and Educational Development Committee of the MEA Minutes, December 9, 1967, Helena, Montana. (See Appendix B, page 87).

Sheboygan, Wisconsin, gave valuable information as to the type of questions which would yield desired information on innovation.

Also, the instrument used by both Brickell,² in his inventory of innovations for the state of New York, and that developed along Brickell's pattern by Edna Hinman,³ in her doctoral dissertation were of additional help in producing a usable instrument.

The final instrument⁴ as developed by the two students--one instrument to be used for the elementary grades (1-6), the other to be used for the secondary grades (7-12)--was returned to the MEA offices for multi-lithing and mailing to Montana schools. The instrument was mailed on February 5, 1968.

Selection of areas and schools to be studied. At the meeting of January 20, 1968 it was decided to follow the pattern of division of the state as presented by the writer (see Figure 1, page 39). As may be seen the state was divided into geographic areas in terms of the number of schools involved and the number of counties involved.

Region 1 (15 Northwest counties) was assigned to the University of Montana at Missoula; Region 2 (11 West Central counties) was assigned to Western Montana College at Dillon; Region 3 (11 Central counties) was assigned to Montana State University at Bozeman; and Region 4 (19 Eastern

²Henry M. Brickell, Organizing New York State for Educational Change (Albany, New York: State Department of Education, 1961).

³Edna Hinman, "Personality Characteristics of School Principals Who Implement Innovation in the Public Schools" (unpublished Doctoral dissertation, Utah State University, 1966).

⁴See Appendix A, page 83.

MONTANA

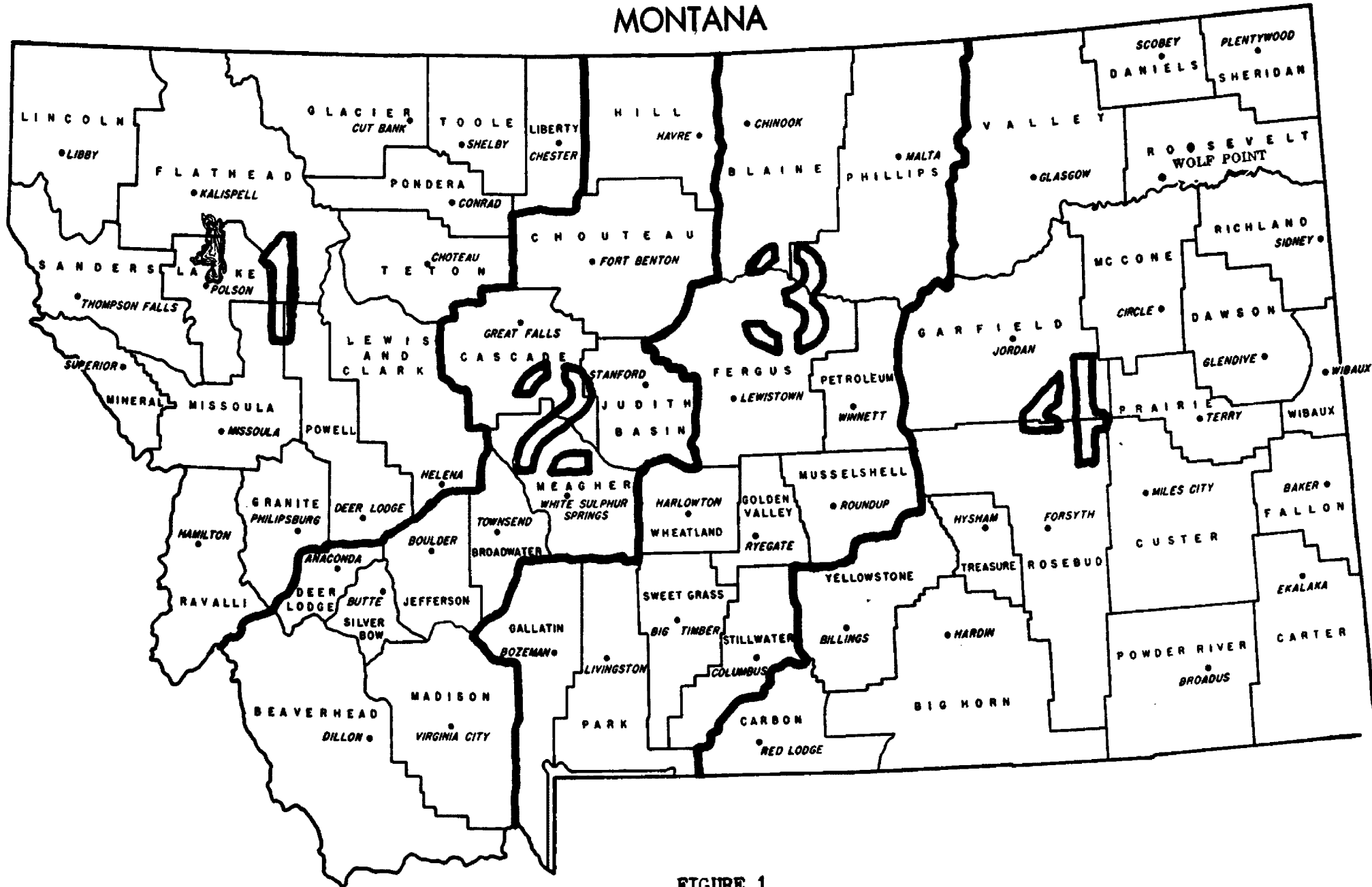


FIGURE 1

DIVISION OF MONTANA INTO AREAS FOR SURVEY OF INNOVATIONS

counties) was assigned to Eastern Montana College at Billings. Figure 2, page 41, shows the counties involved in this researcher's assignment; namely, Ravalli, Granite, Powell, Lewis and Clark, Teton, Pondera, Liberty, Toole, Glacier, Flathead, Lincoln, Sanders, Lake, Mineral, and Missoula.

Distribution of the questionnaire. All junior and senior high school principals in these counties were mailed copies of the questionnaire. The letter⁵ which accompanied was composed by Mr. Maurice J. Hickey of the MEA headquarter's staff. In it he requested full and prompt attention to the study.

By early March the number of returns was so few (and many of these were incomplete) that it was decided to resend the entire instrument to the principals along with a personal letter⁶ from the graduate students and their faculty advisor urging cooperation. By the end of March approximately eighty (80%) per cent of the questionnaires had been returned in sufficient detail to begin actual tallying of the results.

Areas of investigation. The study investigated eight areas in the curriculum: (1) What innovations have been added to your school within the past six years? (2) What two innovations of those listed have been most effective in your school? (3) Describe your method of implementing the two most effective innovations. (4) How were the teachers involved in the planning of these innovations? (5) What means of teacher

⁵See Appendix C, page 91.

⁶See Appendix C, page 91.

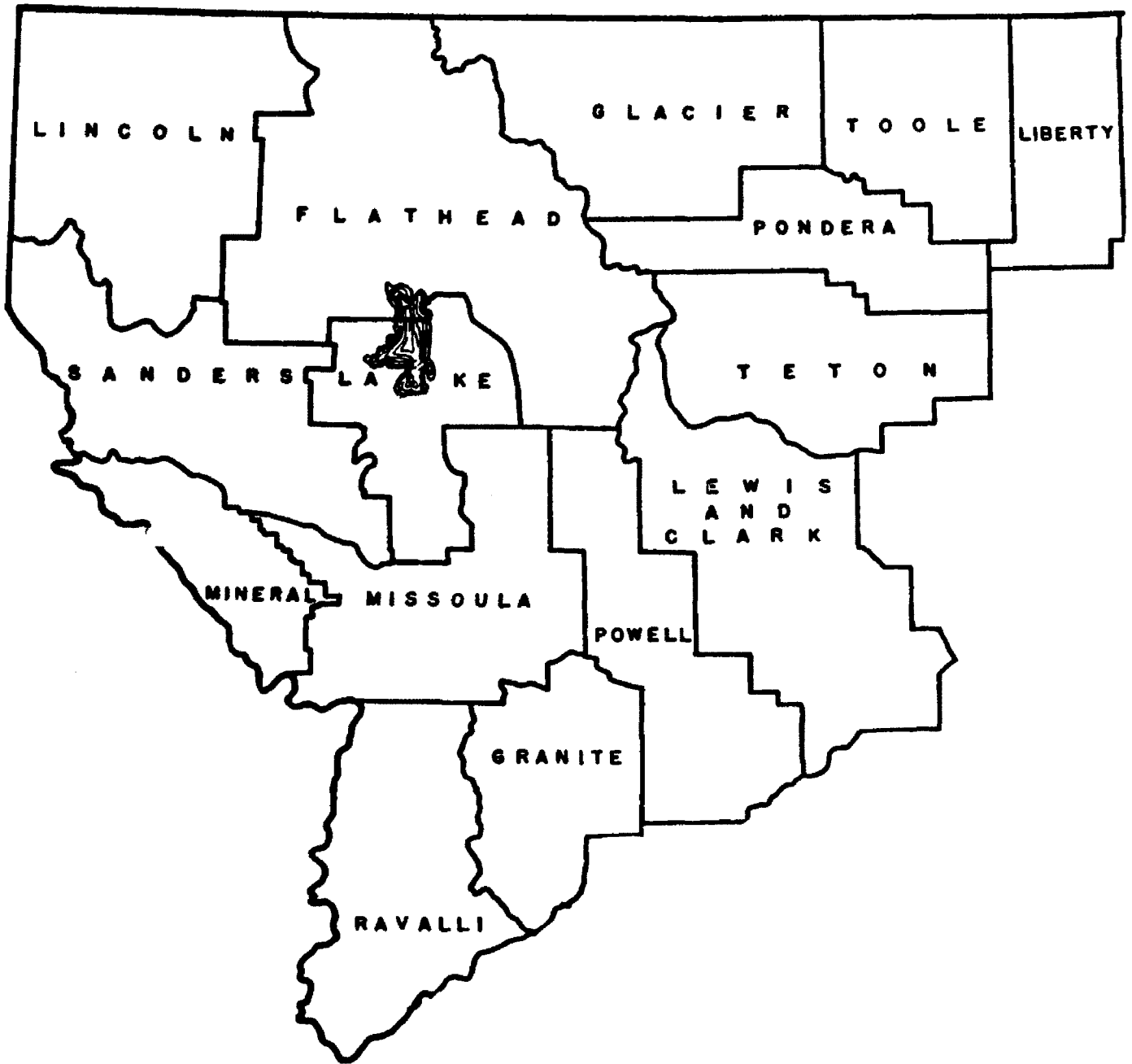


Figure 2

THE FIFTEEN COUNTIES INVOLVED IN SURVEY

preparation was used to implement the innovations? (6) Who is responsible for evaluating innovations within your school? (7) What innovations have you tried and later abandoned? (8) Have you an idea for an innovation which would improve the working of your school?

CHAPTER V

FINDINGS

The sample. Questionnaires were sent to 55 secondary schools in the fifteen counties named earlier. Forty-three schools (37 high schools¹ and 6 junior high schools), or 78 per cent, completed and returned the questionnaires. This would appear to be a fairly representative sample of the schools in Northwest Montana.

Tabulations were made in several different ways to try to determine trends or important differences that might be occurring in various aspects of innovation in the curriculum in these schools, as well as the methods by which innovations were brought about. Kinds of tabulations included: (1) an all-inclusive tabulation of data called for in the questionnaire, (2) a tabulation of innovations in each county, (3) a tabulation of methods of implementating innovations, (4) a tabulation of the open-end type questions in the last portion of the questionnaire, and (5) comparisons of several of these tabulations with each other.

Because there were not enough junior high schools reporting to make a valid study on them alone, the findings of this chapter will include only data from those junior high schools where the answers are directly applicable.

Since this chapter will deal in the main only with the high school, some understanding of the size of the high schools involved in

¹Missoula County High School System was counted as one administrative unit even though there were three high schools in the system.

this portion of the study will give the reader who is not familiar with Montana and its rather unique school sizes a better overall picture. The arrangement of grouping of schools follows this pattern: under 100, 101-200, 201-400 (the jump from intervals of one hundred to two hundred was done because there were not enough schools at the one hundred intervals to warrant separate grouping,) 401-700, the jump of 300 was made in this case for the same reason as that of the 201-400 interval), and the last group, over 700. As can be seen by Table V, page 45, the majority of schools reporting fell in the 101-200 range, indicating that a relatively small school is the main educational institution of this area of Montana. The median size school participating in the study enrolled one hundred and fifty-nine pupils; the average enrollment (excluding the two schools over 1,000) was slightly larger (225 pupils). The enrollment range of participating schools was 63 to 648, again excluding those schools of over 1,000 pupils.

The total number of schools of various sizes to which the questionnaires were sent, the number of schools in each category reporting, and the percentage reporting in each size category are shown in Table V, page 45.

In Table VI the number of innovations (classed as none, 1-3, 4-6, and over) by size of school are reported, as are also the average by size of school. (See page 45.)

The smaller schools ranged from doing nothing to as high as six innovations. The highest number of innovations recorded was sixteen, some of which were unique and will be dealt with in greater detail later in this chapter.

TABLE V
 SIZE AND NUMBER OF HIGH SCHOOLS REPORTING AND THE
 PERCENTAGE REPORTING IN EACH SIZE CATEGORY

School Size	Total Number of Schools to which Questionnaires Were Sent	Number of Schools Reporting	Percentage of Cooperation
Under 100	13	8	61%
101-200	17	15	89%
201-400	8	7	88%
401-700	6	5	83%
Over 700	3	2	67%

TABLE VI
 NUMBER OF AND AVERAGE NUMBER OF INNOVATIONS
 AS REPORTED BY SCHOOLS OF VARIOUS SIZES

Enrollment	Number of Innovations				Average Number of Innovations Reported
	None	1-3	4-6	Over 6	
Under 100	2	3	3	0	3
100-200	1	8	5	0	3
201-400	0	3	2	2	5
401-700	0	0	1	4	7
Over 700	0	0	0	2	12

Identification of innovations. By grouping innovations in areas of study, (i.e., mathematics, science, English, social science, art, etc.) it is found that the innovations in the field of science far outdistance those in other subject areas. The findings of Table VII, page 47, are based on the answers of administrators to Question II of the questionnaire, "Which two of these curricular innovations have been most effective in your school?."

The general wide acceptance of the curriculums designed by national study groups suggests in some measure the innate quality of these programs. Wherever the term "new approach" to a subject is indicated, it must be understood that this refers to an accumulation of various methods not readily classified in suggested categories.

The large group of scientific and mathematical innovations which head the list as most effective should be noted; however, the importance of some new approach to English also shows up. The rather large group which listed the use of remedial reading or speed reading as most effective suggests an increased awareness of this student need. The majority of these reading programs were implemented with funds from the government.

The increasing awareness that art has a place in the curriculum in Montana's schools is also a sign of expanding the curriculum to meet the needs of students. The increase of technical and vocational training courses, too, show that the curriculum is attempting to provide for students' needs in these areas.

In other studies it was shown that, if a school is willing to implement one type of program, the willingness to try more than one program is usually the case. Table VIII, page 48, shows this relationship

TABLE VII

MOST EFFECTIVE INNOVATIONS REPORTED BY MONTANA SCHOOLS

Subject	Number of Schools Using this Program
<u>Science</u>	
New Approach to Science	4
BSCS Biology	3
PSSC Physics	2
CHEM Study	1
CBA Chemistry	1
Total	11
<u>Mathematics</u>	
*Modern Algebra	6
New Approach to Mathematics	2
Total	8
<u>English</u>	
Remedial Reading	4
New Approach to English	4
Speed Reading	1
Humanities	1
Total	10
<u>Social Sciences</u>	
New Approach to Social Science	7
Economic Education	2
Total	9
<u>Other Areas</u>	
New Approach to Art	5
Commercial Subjects	4
Technical Training	4
Home Economics	3
General Music	3
Total	19
Total of most effective innovations	57

*Does not refer to one special type of modern algebra program.

TABLE VIII
 SELECTED INNOVATIONS IN SCIENCE IN RELATION TO SCHOOL SIZE

PSSC	BSCS	CBA or CHEM. Study
174+	419	1,675*
1,675*	174+	3,471*
3,471*	3,471*	546*
546*	546*	378+
455+	378+	201+
183+	110	645
114	455+	648+
385*	201+	153+
	183+	227
	648+	385*
	153+	
	340	
	385*	
	185	

*Refers to this school using all three of these innovations.

+Refers to this school using two of these innovations in any combination.

This figure was computed on the basis of school size and the use of these innovations within the individual school.

by selecting easily identified innovations in the field of science. The three innovations selected for this table were, PSSC, BSCS, and CHEM Study or CBA. If a school is involved in using one of these programs the chances of it using another program of similar nature is indicated.

Of all the schools using one of these three innovations only seven were involved in the use of only one of these innovations, while the others were using at least one in addition to the original program. Furthermore, of all the schools using at least one of these programs, the smallest school was 110 in enrollment, which suggests that there may be a size factor that could be important for the selection and use of these programs.

The length of time that these programs had been in use in the schools surveyed varied from six years to one year. Again, the smaller schools, on the whole, used the innovation for a shorter period of time.

Because innovations seem to follow certain patterns of diffusion as suggested by Carlson,² a method of mapping the distribution of certain innovations is of value in determining where the practices are being used, and may possibly show some interrelations which might not be otherwise observable.

Maps have been developed with the idea of trying to show the distribution and acceptance of innovations by a county-by-county tally. Each map is divided into the counties that are involved in the survey. The number of schools to which questionnaires were sent and the number of schools reporting the use of these various innovations are shown.

²Richard O. Carlson, Adoption of Educational Innovations (Eugene, Oregon: University of Oregon Press, 1965), p. 65.

In interpretation of the numbers on each map the numbers enclosed by a circle represent the number of schools reporting to be using the practice, and the numbers which are enclosed by a square represent the percentage of the schools in that county that are using the practice. Counties left blank did not report using any of these practices.

In interpreting Figures 3 and 4, pages 51 and 52, it must be kept in mind that these represent only the number of junior and senior high schools to which the questionnaires were sent. Percentages of return of questionnaires for the high schools and junior high schools are shown in Figures 5 and 6, pages 53 and 54. The numbers enclosed by circles represent the number of schools returning questionnaires, while those figures enclosed by a square represent the percentage of schools in the county returning the questionnaires.

The PSSC physics program as described in Chapter I of this thesis is the only reference subject for Figure 7, page 55. Since only PSSC physics programs were counted in addition to numbers of high schools reporting its use, the percentage of schools in the county reporting to be using this program is also given. Again the schools using this program are in circles, while the percentages are given in the squares.

The distribution of the new programs in chemistry (CHEM Study and/or CBA) is shown in Figure 8, page 56. Because of the similarity of the two programs, no separation was made on the map.

In addition to the distribution of these two programs the map on page 58 also shows the number of schools, and percentage of all schools in the county to be using either the CHEM Study program or the CBA program.

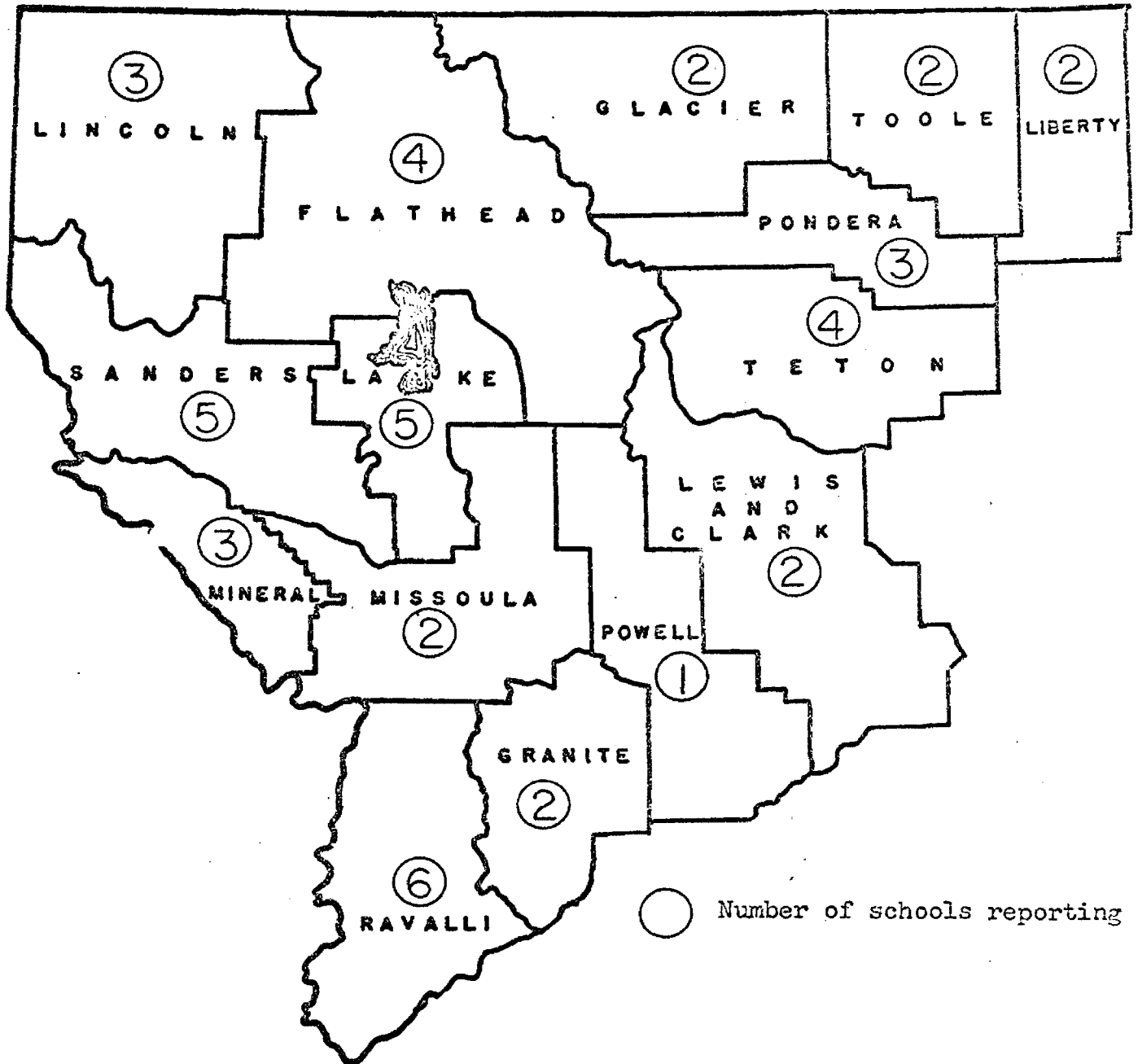


Figure 3
NUMBER OF HIGH SCHOOLS TO WHICH QUESTIONNAIRES WERE SENT

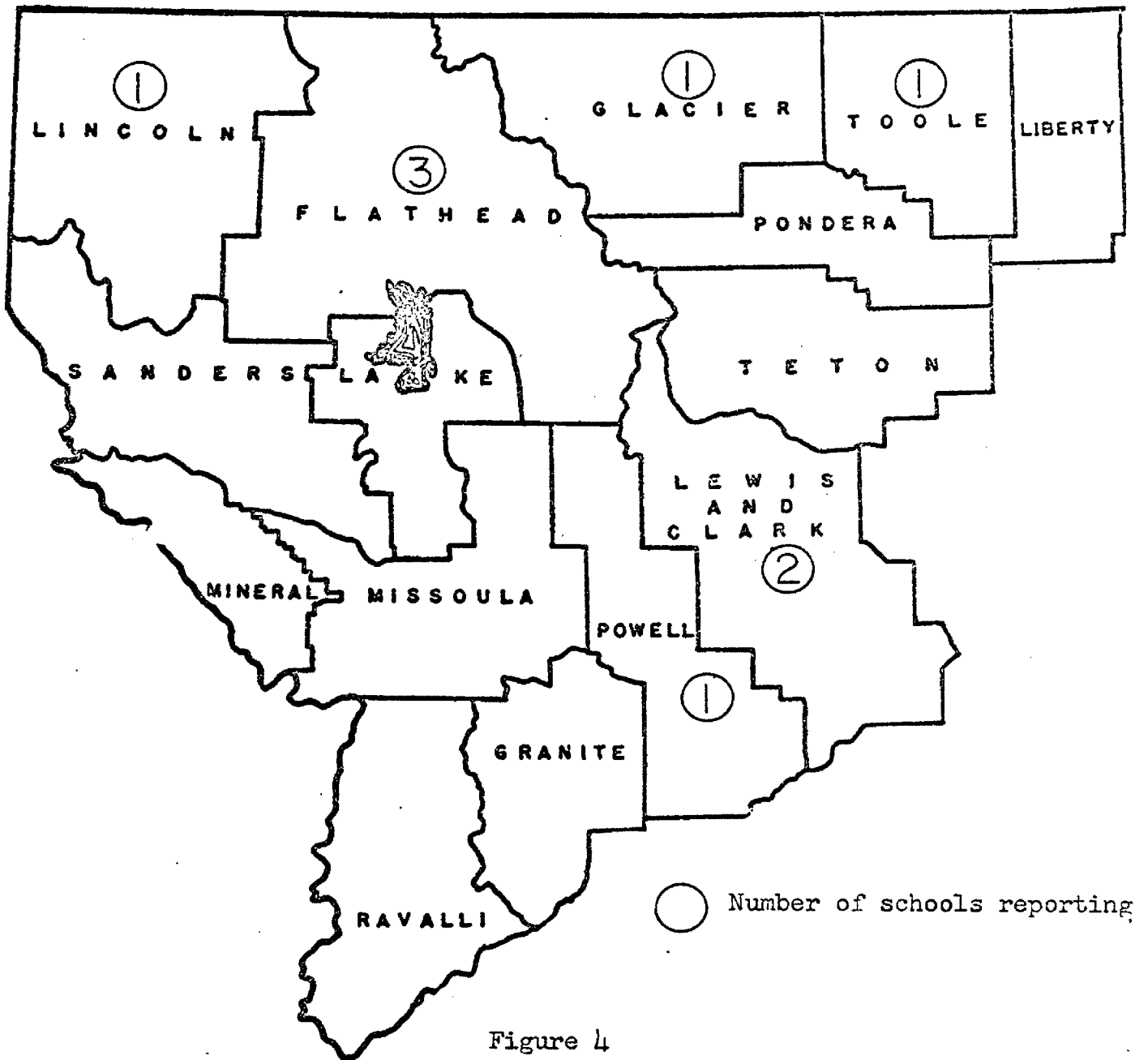


Figure 4
NUMBER OF JUNIOR HIGH SCHOOLS TO WHICH QUESTIONNAIRES WERE SENT

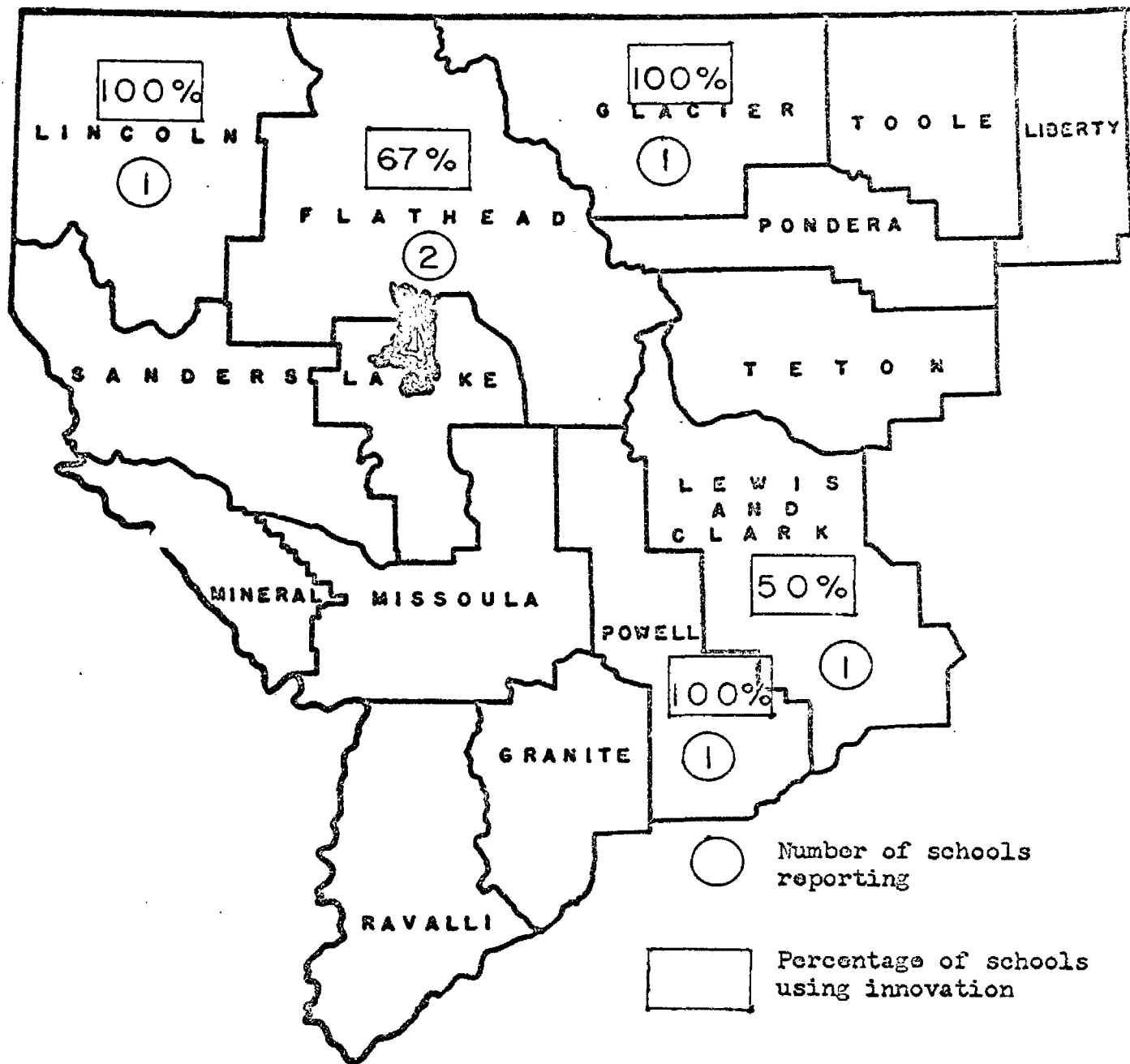


Figure 5

NUMBER OF JUNIOR HIGH SCHOOLS RETURNING QUESTIONNAIRES AND PERCENTAGE OF SCHOOLS REPRESENTED

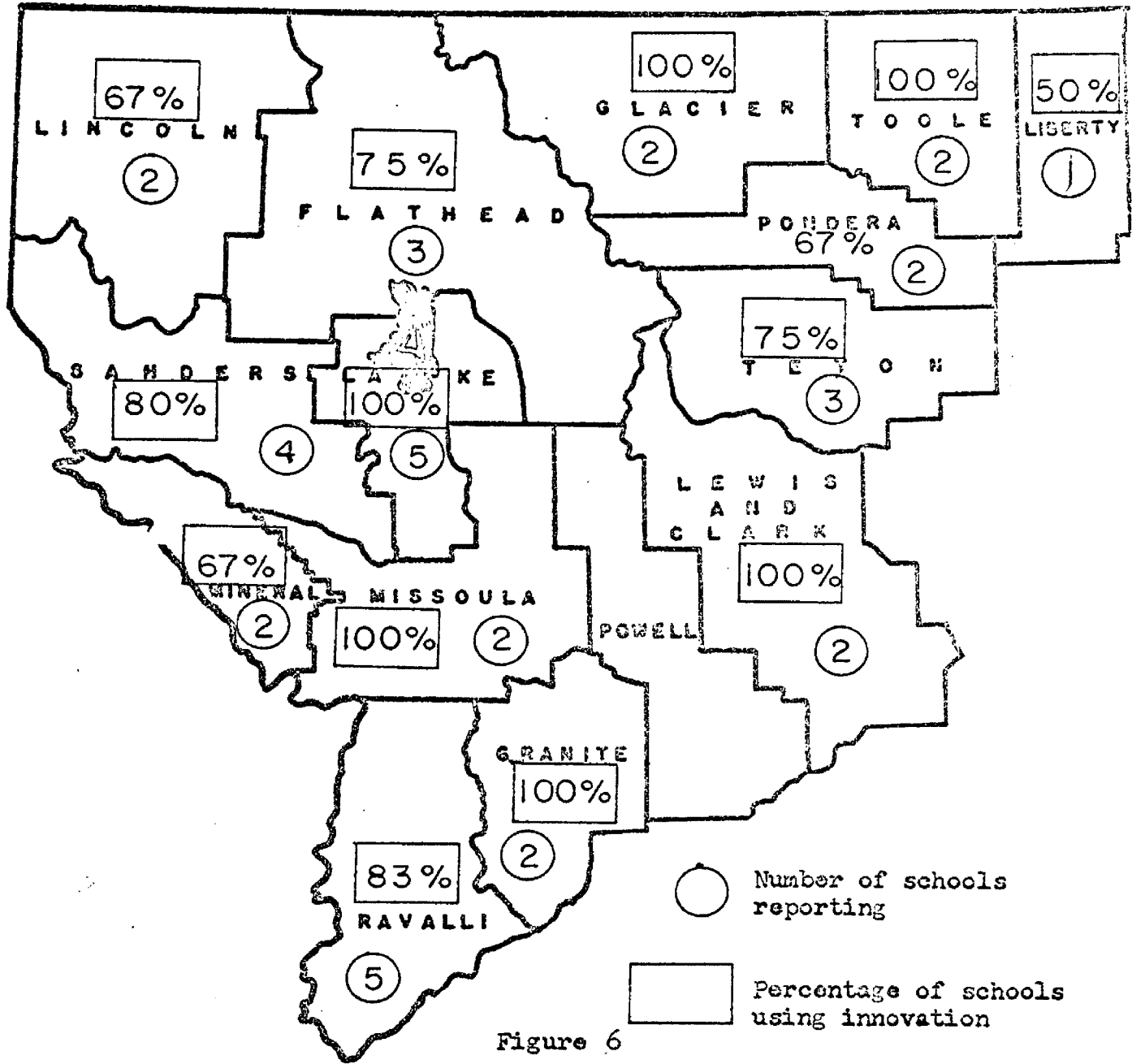


Figure 6

NUMBER OF HIGH SCHOOLS RETURNING QUESTIONNAIRES AND PERCENTAGE OF SCHOOLS REPRESENTED

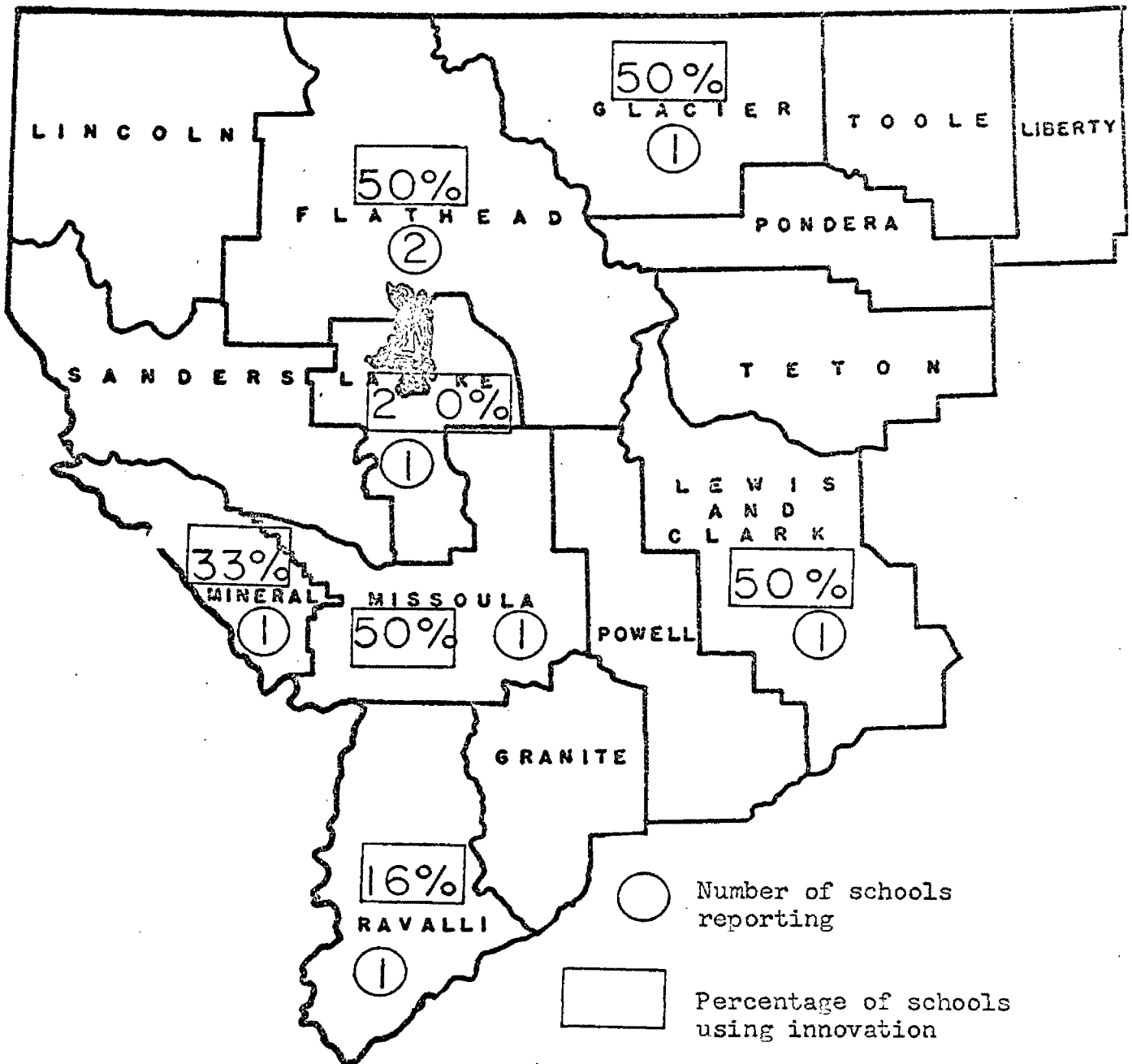


Figure 7

THE NUMBER AND PERCENTAGE OF SCHOOLS REPORTING USE OF PSSC PHYSICS

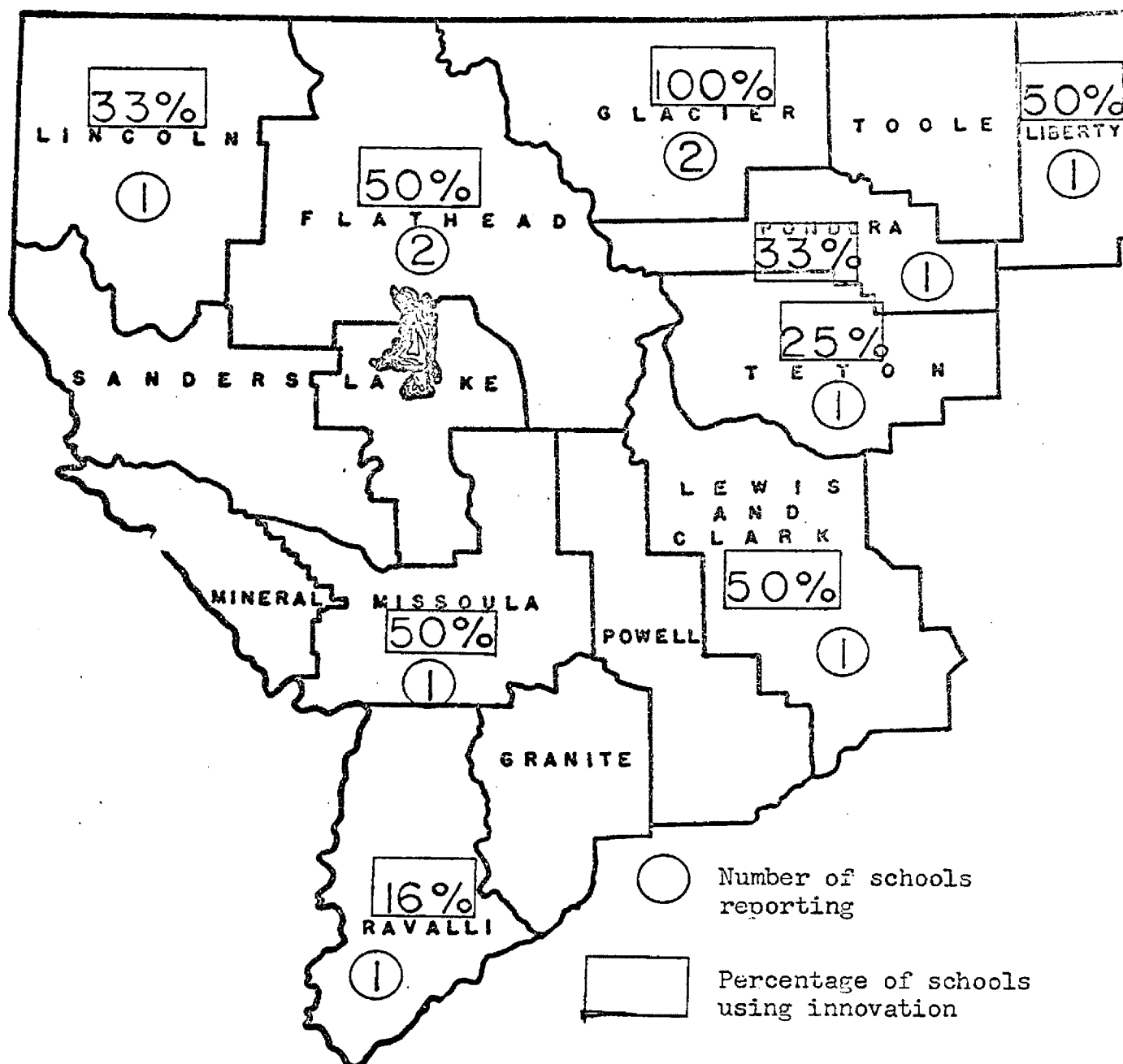


Figure 8

THE NUMBER AND PERCENTAGE OF SCHOOLS REPORTING USE
OF THE CHEM STUDY OR CBA APPROACH TO CHEMISTRY

The BSCS program was the most frequently used program in the science area. Figure 9, page 58, shows the distribution, number of schools, and percentage of all schools in the county to be using the BSCS program.

Earth science, or geo-science, seems also to be a widely diffused and accepted program in the area of science education, with only 5 counties reporting that they did not have any program of this nature. Figure 10, page 59, shows the distribution, number of schools, and percentage of all schools in the county to be using an earth science (sometimes called geo-science) course of some type.

Modern algebra was quite widely diffused. However, it was not determined exactly what type of modern algebra this involved. The distinction was not made in the questionnaire as to the specific type of modern algebra program currently in use in the high schools throughout Montana. No indication was made as to whether some type of advanced mathematics was meant, rather than modern algebra at the ninth and/or tenth grade. Figure 11, page 60, shows the distribution, number of schools, and percentage of all schools in the county to be using some type of modern algebra.

A new approach to home economics was another subject which was rather widely reported. The most interesting fact regarding this subject is the number of schools reported to be doing something in the area of home economics for boys. The majority of schools which reported to be doing something in the field were also in the process of curriculum change in this area through improvement of content or enlargement of the scope of the program. Figure 12, page 61, shows the distribution, number

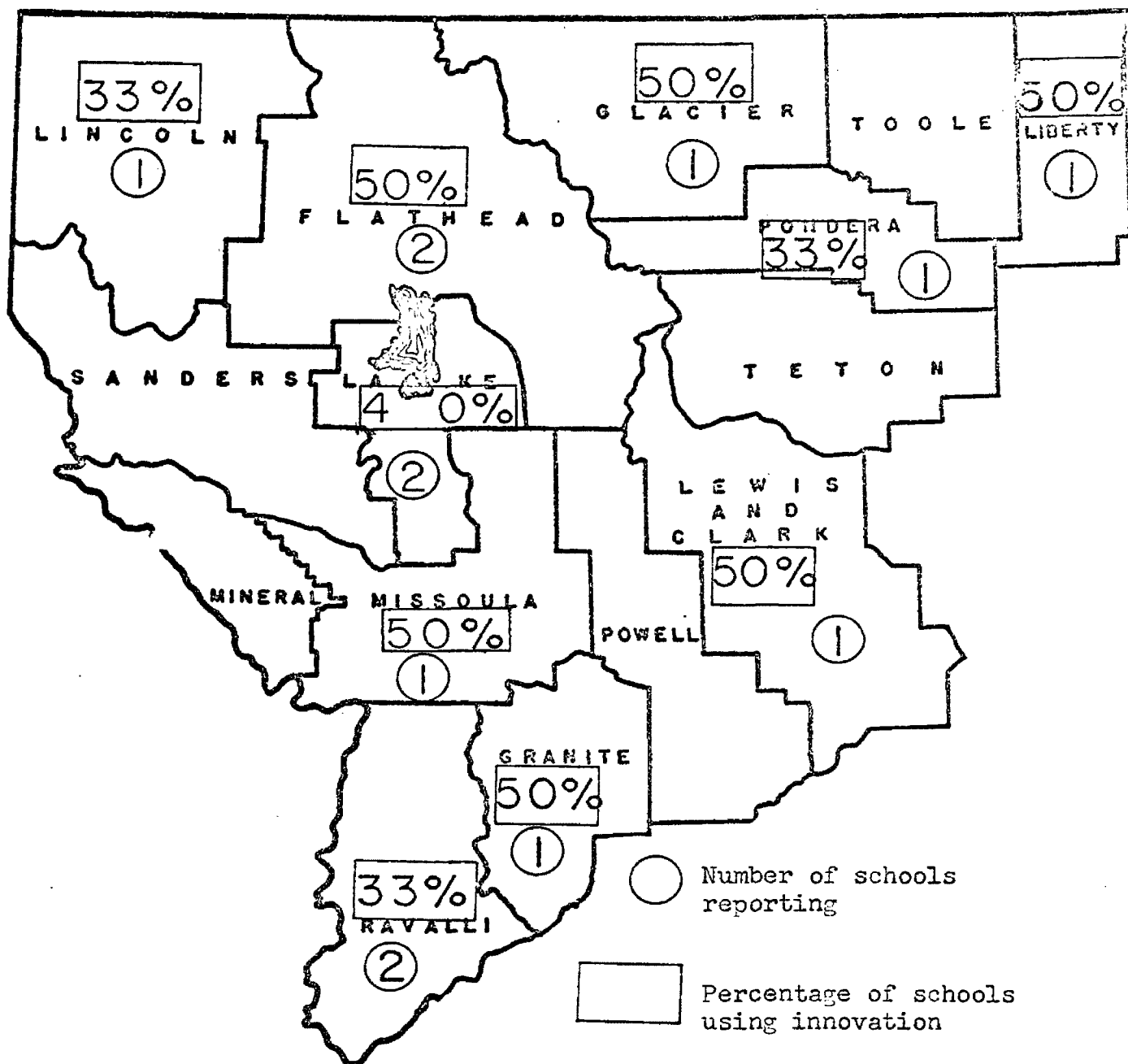


Figure 9

THE NUMBER AND PERCENTAGE OF SCHOOLS REPORTING USE OF THE BCS BIOLOGY PROGRAM

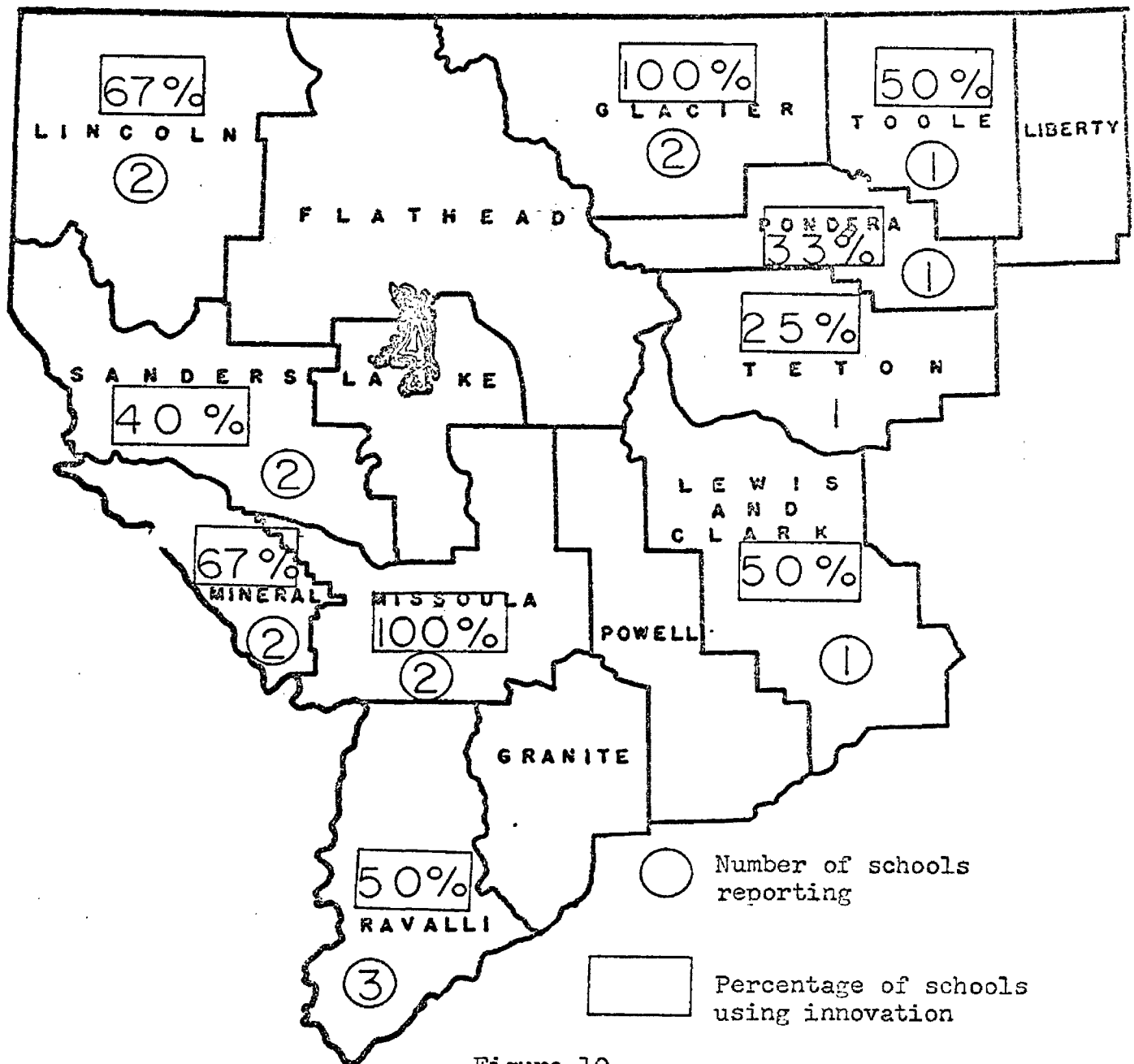


Figure 10

THE NUMBER AND PERCENTAGE OF SCHOOLS REPORTING USE OF EARTH SCIENCE

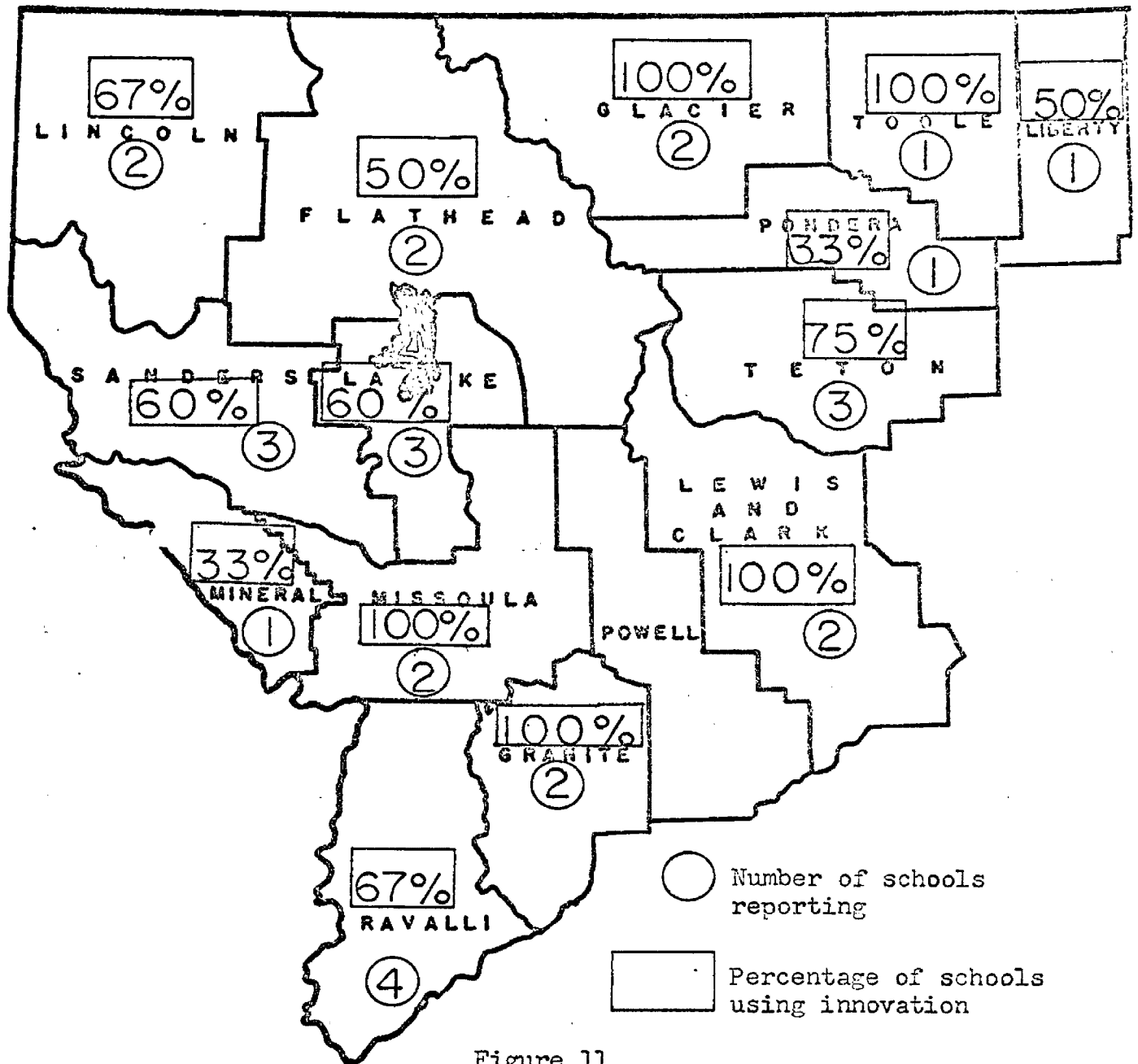


Figure 11
THE NUMBER AND PERCENTAGE OF SCHOOLS REPORTING
USE OF SOME TYPE OF MODERN ALGEBRA

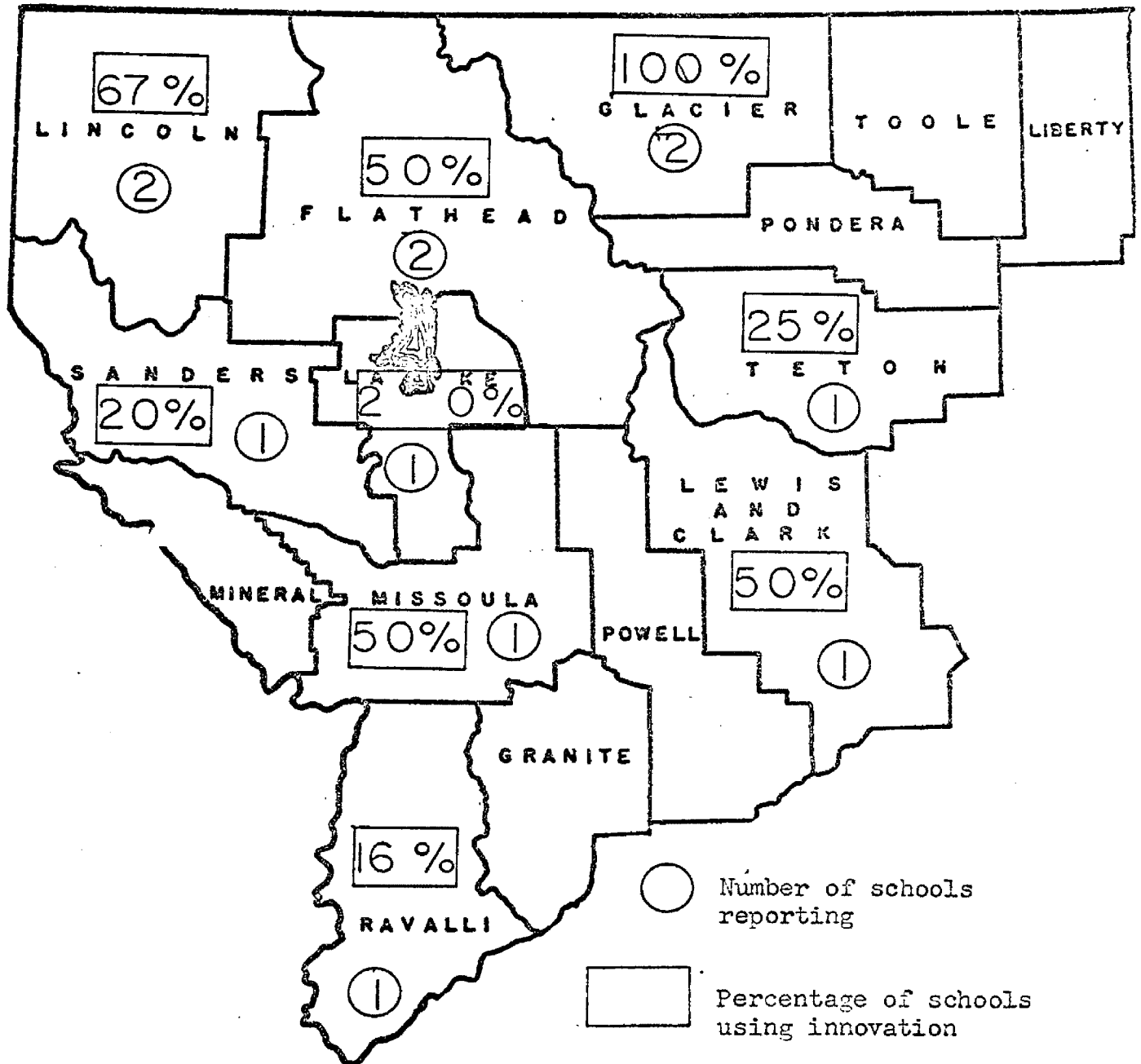


Figure 12

THE NUMBER AND PERCENTAGE OF SCHOOLS REPORTING
USE OF A HOME ECONOMICS INNOVATION

of schools, and percentage of all schools in the county to be using a new approach to home economics.

Remedial reading has one of the widest acceptances of programs in the field of English covered in this study. The majority of these programs in remedial reading appear to be supported at least in part by funds from the federal government specifically designated for this program of reading. Figure 13, page 63, shows the distribution, number of schools, and percentage of all schools in the county to be using a program in remedial reading.

Economic education as an innovation was widely reported. The only concentration of those schools reporting not to be participating in a program of this nature are in the northeast section of the survey area. Figure 14, page 64, shows the distribution, number of schools, and percentage of all schools in the county to be using some type of program of economic education.

Implementation of innovations. There are, of course, many different methods by which an innovation can be implemented. In Table IX, page 65, the most commonly used methods of implementation are considered in terms of staff utilization, procedures, organization, scheduling, and facilities. As one interprets this table it should be noted that these methods were only those reported as applying to the two most effective innovations of one school. Many schools did not show any of these practices to be in operation, thus explaining in part the small number of schools selecting certain of the methods. The numbers presented represent the total number of schools stating that they were using the practice named. No effort was made in the table to categorize the

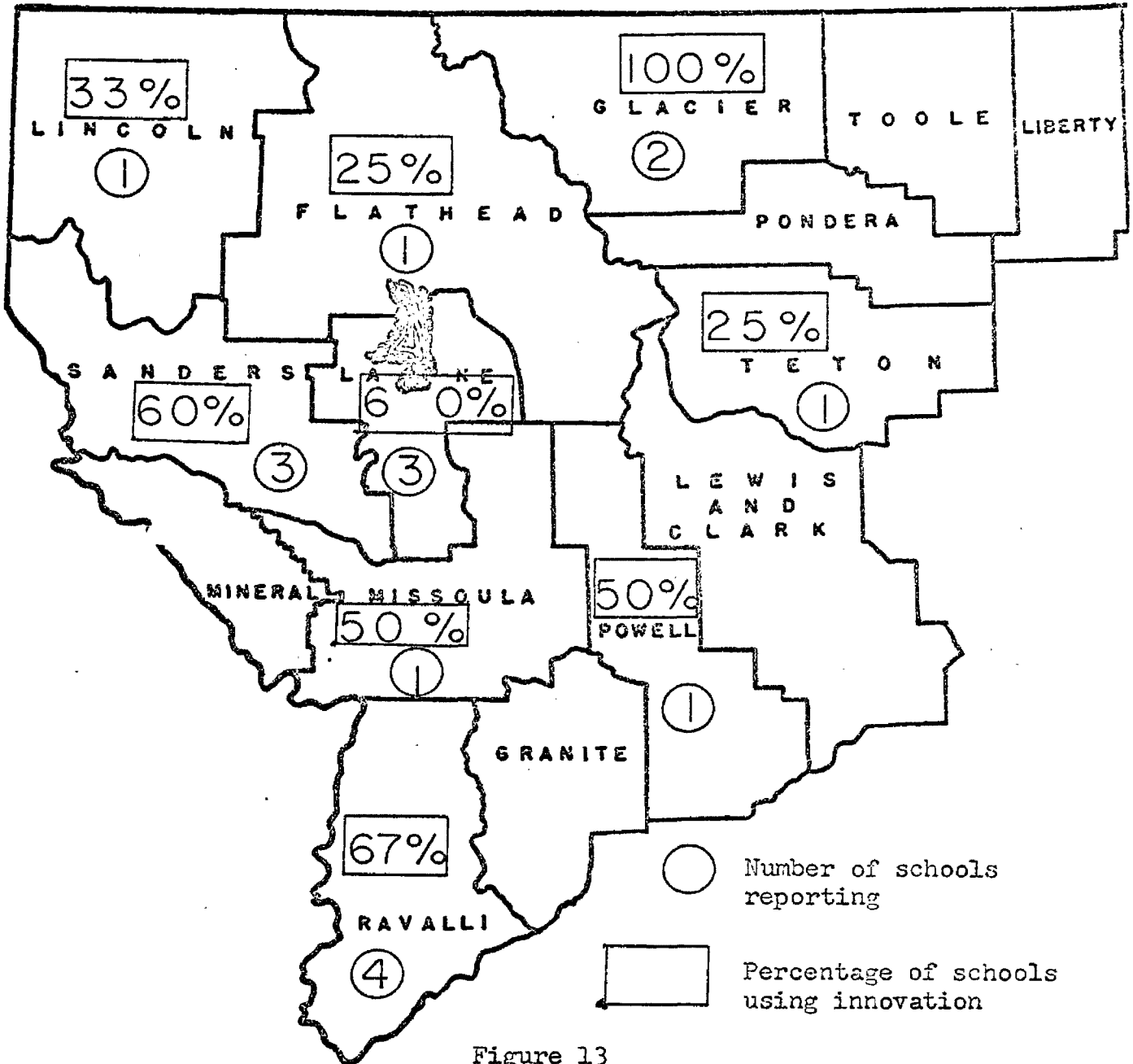


Figure 13

THE NUMBER AND PERCENTAGE OF SCHOOLS REPORTING
USE OF A REMEDIAL READING PROGRAM

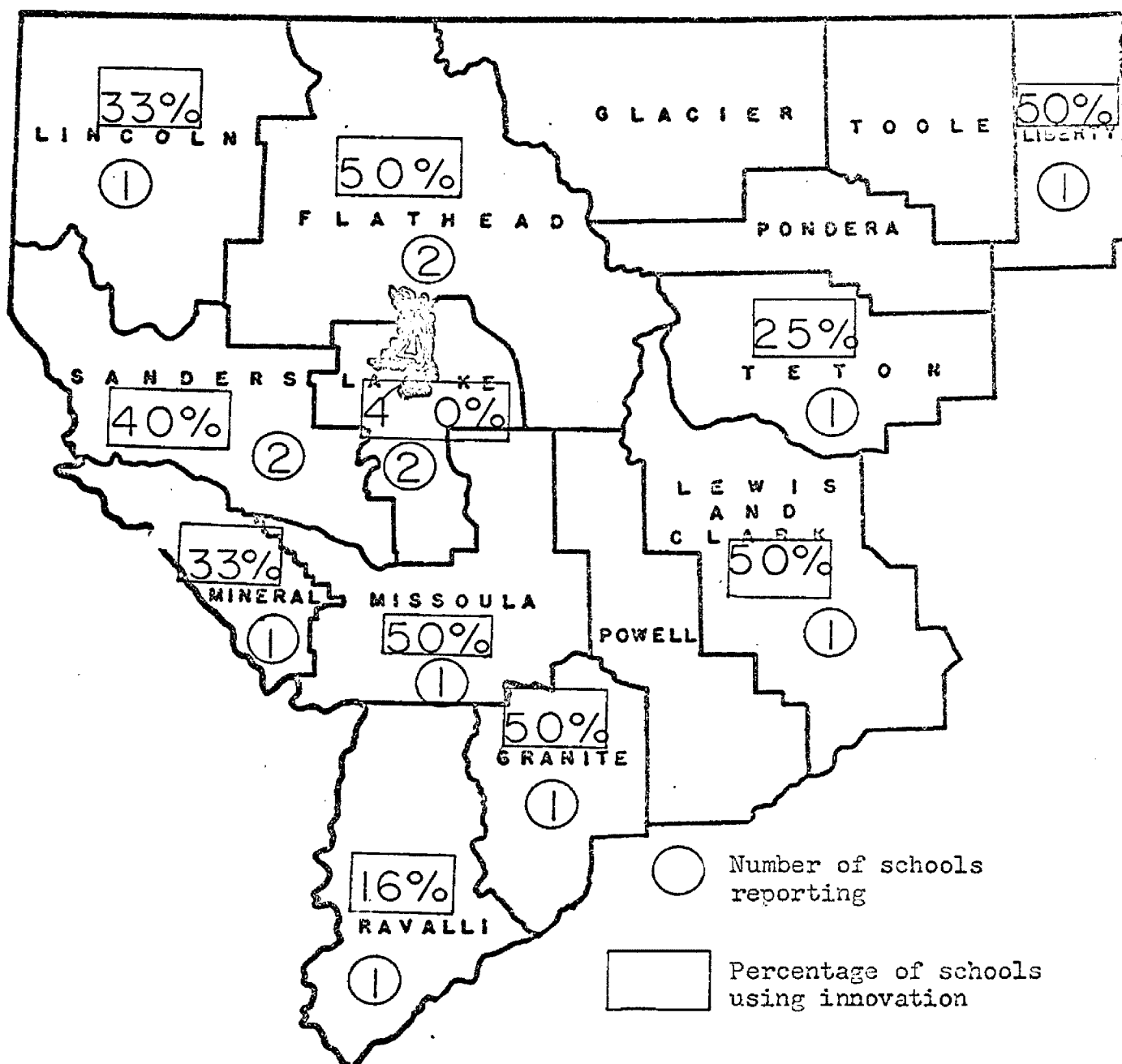


Figure 14

THE NUMBER AND PERCENTAGE OF SCHOOLS REPORTING
USE OF SOME TYPE OF ECONOMIC EDUCATION

TABLE IX
METHODS OF IMPLEMENTING INNOVATIONS AS REPORTED
BY THE SCHOOLS IN THE SURVEY

Method of implementation	Number of schools using
Staff utilization	
Team, department, or school head	12
Teacher aides, lay readers, student aides	10
Team or cooperative teaching	9
Research and development specialist	3
Procedures	
Independent study--individualized instruction	16
Work experience	7
Programmed learning--teaching machines	6
Seminars, problems	6
Advanced placement	7
Language labs	3
Organization (students)	
Continuous progress	12
Multi-track	10
Flexible size group	7
Acceleration	5
Separate schools	2
Scheduling (time)	
Individual, day by day, week by week	14
Block	4
Modular scheduling	2
Extended day	1
Facilities	
Open laboratories, student work rooms	9
Large and small group instructional centers	8
School or departmental resource center	8
School, departmental, or team conference centers	4
Electronically equipped study carrels	3

choice "other," since it covered such a wide variety of practices. Examination of Table IX shows there is a rather wide acceptance of the "newer" types of procedures being used to implement innovations.

The extent to which teachers were involved in the planning of innovations was sought by asking the question, "How were the teachers involved in the planning of these innovations?." The findings suggest that the teacher is highly instrumental in the initiation of new methods. The following results show the distribution of answers to the question as to who did the planning of innovations:

Teachers	22
Administration Only	2
Teachers and Administration	2

In each case it was primarily the teacher who was most concerned in planning the innovation, though it is probably true that final approval would still rest with the administrator. In the two cases cited for "administration only" the schools were small (under 100 pupils). The administrator probably plays a much more active part in curricular revision in a small school than he does in a larger school where his function is much more heavily administrative. The findings also concur with the findings of the R & D Project as conducted in Sheboygan, Wisconsin.³

In that study it was found that half of the teachers reported that they did have innovative practices which were either being tried out in the individual school or were being considered for trial in their school.

³Warren H. Soeteber, Bulletin, Sheboygan Public Schools, No. 8, November 27, 1967, Sheboygan, Wisconsin.

If an innovation is to be successful during its initiation and throughout its practice in the school, the quality of the teacher is not to be underestimated. The requirements for continuing schooling through summer school sessions and inservice work seem to provide help in the application of new practices and the introduction of new methods into the school system. The following results show the methods of teacher preparation for the implementation of innovations in the schools. In each case these figures are based on the two most effective innovations as decided by the administrator filling out the questionnaire.

Inservice	12
*All ready prepared	9
*College course	8

If any innovation is to be effective it must be evaluated; and evaluated as objectively as possible. The question of evaluation was asked in the questionnaire in terms of who had the responsibility for the evaluation of an innovation within the school or school system. As may be seen from the data which appears on the following page the evaluation process appears to be concentrated primarily around three groups: the administration, the faculty, and the students. In answer to the question, "Who is responsible for evaluating innovations within your school?," the following responses were made:

*These divisions could be grouped together because in each case college preparation is the basis for preparation of the teacher.

Principal and Teacher	13
Faculty-Students-Administration . . .	5
Teacher-Principal-Superintendent . .	4
Superintendent	3
Teacher and Superintendent	2
Curriculum Coordinator	2

Sometimes, no matter how carefully an innovation has been selected, there are some factors which will cause it to be non-functional in a given school system. Of all the schools surveyed the question was asked: "What innovations have you tried and later abandoned? Why?." Of the schools surveyed 34 had never dropped an innovation, while twelve schools dropped at least one or more innovations. The most common reason for the abandonment of an innovation was simply "it didn't work out in our school." The reasons for these innovations not working out sometimes were quite complex and at other times fairly simple. The reasons why innovations were dropped are shown below:

Didn't work out	4
Lack of funds	3
No challenge to students	2
Losses of personnel	2
Staff problems	2
No change in student knowledge	1
Too hard for students	1
Too easy to copy programmed SRA algebra	1
Poor student response	1
Lack of flexibility	1

It should be noted that the majority of reasons for dropping an innovation lie along certain lines; namely, some type of staff problem, lack of funds, and a "catch-all" category, "didn't work out," which suggests a variety of reasons too complicated to be mentioned in depth in this paper. These findings do, however, compare to those obtained by the NCA in their study of curriculum innovations.⁴

New ideas for the future were sought by asking the question, "Have you an idea for an innovation which you believe would improve the working of your school? Please describe." The response to this question, shown below, identify the new idea and the number of schools reported to be considering its use:

None at present	19
A-V resource center	4
More facilities (new buildings)	4
Modified modular scheduling	4
Individual study time	3
Team teaching	2
Flexible scheduling	2
Non-supervised study halls	1
More semi-professional help	1
Pre-vocational course	1
On-the-job training	1
Specialized (master) teachers	1
No textbook approach	1
Pass-fail system	1
Foreign language lab	1
Business education lab	1

⁴Gordon Cawelti, "Innovative Practices in High Schools: Who Does What and Why and How," Reprinted from Nations Schools (New York: McGraw-Hill Book Co., April, 1967).

As shown in these data, a majority of schools reported that they were not at present considering any change in the curriculum. However, for schools that did report consideration of an innovation, many indicated that this practice would soon be in use.

Observation of innovations. Lack of financial resources kept the researcher from making more than two visitations of schools employing innovations. The two schools selected for observation were using what appeared to be outstanding and different approaches to a traditional curriculum.

Each school was visited with the idea of observing for one day and, based on this observation, writing a brief description of the innovation. The two innovations selected and described were: (1) an outgrowth program of the BSCS biology curriculum, and (2) a new approach to teaching English as provided by a new study area and cooperating teachers.

Some evaluation will be given each innovation by stating: (1) the objectives of the program, (2) teacher reaction to the program, (3) student reaction to the program, and (4) duration of the program.

Outgrowth of BSCS biology, an outdoor science laboratory, in

School A:

Subject: BSCS biology, chemistry, physics, earth science.

Grades: 9 - 12.

Number of teachers: 16.

Range of mental ability: From the mentally retarded special education classes to the most advanced science students.

Time: All day Saturday.

Equipment and materials: Outdoor study areas, field equipment and instruments.

The new materials available from the Biological Sciences Curriculum Study approach were being used in an effort to induce pupils to think experimentally. However, in contrast to the more "traditional" BSCS program, this school system developed a program of study which turned into a four-school program involving not only BSCS students but also chemistry, physics, earth science, and mentally retarded students.

The program was begun in 1966, as an outgrowth of the BSCS "Green" version, which requires outdoor study. Additional funds were made available through an ESEA Title III grant.

At the time of the observation sixteen teachers from four area high schools were involved in this program, along with 225 ninth grade earth science students, 100 eleventh grade chemistry students, 100 twelfth grade physics students, 60 forestry students, and the students from the special education department (mentally retarded).

Three separate areas of outdoor study had been set aside by the United States Forest Service to show the students the various areas of scientific research in relation to the natural environment. These study areas had been selected for their qualities as (1) a geological area, (2) a wildlife management area, and (3) a forest community area.

The objectives of this program were: (1) to develop an awareness and appreciation of nature by providing a natural environment where the concept of life can be observed and studied; (2) to provide a site for teacher inservice training, outdoor classes, and individual experiments; and, (3) to inform the citizenry and thereby to provide incentive for perpetuation of natural resources.

The results to date have been excellent with teachers and students enthusiastic about the program. (It has been so successful that the program had to be enlarged to allow for greater participation.) Since 1966 the program has grown from a small group of students and teachers participating, to a large and diversified group of students and teachers. The outlook is promising for this program with the growing enthusiasm and endless supply of educational projects which it offers.

A new approach to English made possible by an increased instructional area in School B:

Subject: Junior English.

Grades: 11th only.

Number of teachers: Two English teachers (team), teacher aides, student teachers, and four consulting teachers from art, music, history, and English.

Number of students: 110.

Time spent: 5 days a week one hour per day.

Materials used: Paperback books (the key to the program) allow for more reading at a reasonable rate to students.

Junior students in English were found to have the opportunity during the second semester of the school year to choose one of three areas of English study. The traditional program is also offered.

The program had been set up in such a way as to maximize flexibility by permitting switching from one program to another during the semester.

The three areas of choice were: (1) speech and drama, research papers, the American novel, and semantics; (2) pre-college program--an in-depth study of the American novels of all historic periods of literature,

and expository writing; and (3) individualized curriculum involving creative writing--short stories, novels, and notebooks.

Each of these sections within the groups was taught for a certain length of time during which the students were permitted to switch from one program to another to follow his interests. Group (2), however, was found to be slightly more rigid than the other two because the method of teaching the course required that the student spend most of his time in this course. The student, however, was given the chance to switch to another section if he desired, provided he can also keep up his work in his own group.

This course was made possible in no small way by an improved physical plant. A double room for instruction served as the home base for these courses, and the library was immediately adjacent. In this large instructional area an overhead projector was used to help reach both groups when necessary, as was also a speaker system which enabled the teacher to talk to the entire group with less strain. Both the library and the classroom were completely carpeted which cut down on noise considerably, especially when both classes were in session in the single room.

The objective of this program as stated by the instructor was to allow for individual differences within a defined curriculum of three areas, with some flexibility. Because the program was started only this year (1968), results have not yet been determined but reaction of teachers and students appeared to have been favorable to date. It was felt, however, by the teacher in charge of the program that, if he left, the program would fall by the way side because of poor interaction of the other teachers in the English department.

CHAPTER VI

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

I. SUMMARY

The purpose of this study was to identify innovative practices in secondary schools in northwest Montana. The area of study consisted of the following 15 counties in northwest Montana: Ravalli, Granite, Lewis and Clark, Powell, Teton, Pondera, Liberty, Toole, Glacier, Flathead, Lincoln, Sanders, Lake, Missoula, and Mineral. Therefore, the findings may only be generalized on this population. If one can assume that these schools are reasonably representative of Montana schools in general, the findings may have some statewide application.

This study of the 15 counties was part of a statewide study of innovations initiated by the Curriculum and Educational Development Committee of the Montana Education Association. Innovations in other portions of the state were studied by graduate students from other institutions.

A questionnaire was developed to help identify specific innovative practices, and to give the administrator filling it out a chance to express his ideas for the future.

Answers to the following questions were sought: (1) What innovations have been added to your school within the past six years? (2) What two innovations of those listed have been most effective in your school? (3) Describe your method of implementing the two most effective innovations. (4) How were the teachers involved in the planning of these innovations? (5) What means of teacher preparation was used to implement the innovation? (6) Who is responsible for evaluating innovations within your

school? (7) What innovations have you tried and later abandoned? Why?
(8) Have you an idea for an innovation which would improve the working of your school?

II. CONCLUSIONS

Conclusions regarding existence of innovations.

1. Of all the schools returning the questionnaire only 3 schools reported that they were doing nothing new, which can be taken to mean that their programs were largely traditional in terms of course content.

2. Most schools, no matter what the size, were found to be using at least one and, in many cases over 4 innovative practices which had been adopted within the past 6 years.

3. The most commonly reported innovations were in the fields of science or mathematics.

4. The number of innovations tended to increase as the size of school increased.

5. If a school was using one innovative practice, it was likely to be involved in a second or third new practice. This was especially true in the fields of science and mathematics.

Conclusions with respect to "most effective" innovations. By numerical count, subject areas as rated "most effective" by administrators were:

1. Innovations in the field of science were most commonly reported to be the "most effective," with 11 administrators rating innovations in the field as "most effective" for their school. The field of science included these subjects: new approach to science, BSCS Biology, PSSC Physics, CHEM Study, and CBA Chemistry.

2. With 10 administrators ranking innovations in the field of English as "most effective" in their school, this curricular area was second in frequency to science. The courses in English included: remedial reading, new approach to English, speed reading, and humanities.

3. The innovations in social sciences as rated by 9 administrators ranked third in order of frequency with these courses: new approach to social science, and economic education.

4. Eight administrators rated the field of mathematics as having the "most effective" innovations in their school. Subjects mentioned were: modern algebra, a new approach to mathematics, and advanced mathematics.

5. Other areas of innovation that were rated as "most effective" were: art, commercial subjects, technical training, home economics, and general music.

Conclusions with regard to implementation of innovations.

1. The most commonly used method of involving the staff in implementing an innovation was some combination of staff members (team), department heads, administrators and teacher aides.

2. The method of independent study or individualized instruction was most frequently chosen by administrators as the means by which the procedures were carried out.

3. The method of organization of students most frequently chosen was continuous progress, followed by multi-track organization.

4. Scheduling was achieved in the main by individual scheduling innovations were either day-by-day or week-by-week.

5. The facilities most commonly used for the implementation of these innovations were either: open laboratories, student work rooms, or large and small group instructional areas.

Conclusions regarding how teachers were involved in planning of the innovations. In over 85 per cent of the schools reporting the teachers were highly instrumental in the planning of the innovations. In all cases the teachers had some word in their planning even if they were not entirely responsible for its planning.

Conclusions regarding the method of teacher preparation for the innovation. In all cases, the teachers were prepared by one of two methods: (1) inservice training which was the most common method reported, and (2) college training at summer school which also received wide approval.

Conclusions regarding the evaluation of innovations. In all cases the administration had the final say as to the effectiveness of an innovation. In a majority of the cases, however, the administrator was not the sole evaluator. Both the teachers and students were given the opportunity to voice opinion as to the effectiveness of an innovation.

Conclusions regarding abandonment of innovations. The abandonment rate, although slight, focused around two major themes: (1) "didn't work," a reason given for various problems created such as staff quarrels, loss of personnel, no challenge to students, lack of flexibility, etc.; (2) lack of funds for continuation of the program.

Conclusions regarding ideas for the future. Of the schools responding to this questionnaire over half (24) indicated that they had no idea for future innovations at this time. The remaining (19) administrators did have innovative plans for the future. Many of these were to be put into use shortly.

III. RECOMMENDATIONS

At the start of this study, it was felt that this was only the beginning of several studies which would grow out of it before a thorough identification and description of the state of innovativeness in Montana could be determined. Some areas needing additional study before this goal can be realized are:

(1) A greater in-depth description of successful innovations within each school system.

(2) Reasons for negative and/or lethargic attitudes of Montana administrators towards change.

(3) An effort to determine why innovative practices tend to be so spottily located in the various counties.

(4) The role of federal education funds is encouraging various curriculum innovations.

(5) The possible effect of school consolidation on the improvement of the curriculum (particularly curriculum innovations) in the high schools of the state.

(6) The extent to which the schools reporting innovative practices as indicated in this study are actually using them.

(7) The evaluation of innovations being used in schools.

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APPENDIX A
THE INSTRUMENT

SURVEY OF CURRICULAR INNOVATIONS
IN MONTANA PUBLIC SCHOOLS
Secondary (7-12)

Identification: Town or City _____ Name of School _____

I. What innovations (courses, approaches to courses, marked changes in course content) have been added to your school's curriculum within the past 6 years? Please circle the appropriate numbers below, and indicate in the space provided how long each innovation has been used.

In the field of Science

No. of yrs. used

- 1. BSCS Biology _____
- 2. PSSC Physics _____
- 3. Chem. Study _____
- 4. CBA Chemistry _____
- 5. Geo-Science or Earth Science _____
- 6. Other (Identify, briefly describe, and indicate length of time used.)

In the field of Mathematics

- 7. Modern Algebra _____
- 8. Other (Identify, briefly describe, and indicate length of time used.)

In the field of Social Science

- 9. Economic Education _____
- 10. Family Living _____
- 11. Intergroup Relations, Intragroup Dynamics _____
- 12. Consumer Education _____
- 13. Other (Identify, briefly describe, and indicate length of time used.)

In the field of English

- 14. Humanities _____
- 15. Remedial Reading Clinics _____
- 16. Speed Reading _____
- 17. Other (Identify, briefly describe, and indicate length of time used.)

In the field of Vocational Education

- 18. Technical Training (e.g., data processing--identify, describe, and indicate length of time used.)

- 19. Home Economics (Identify course or new approach, briefly describe, and indicate length of time used.)

- 20. Vocational Agriculture (Identify course or new approach, briefly describe, and indicate length of time used.)

- 21. Commercial Subjects (Identify course or new approach, briefly describe, and indicate length of time used.)

22. Other (Identify, briefly describe and indicate length of time used.)

In the field of Physical Education

23. Leisure time programs (e.g., camping. Identify, briefly describe):

24. Other: (Identify and briefly describe)

In the fields of Art and Music

25. General Music _____ years used

26. Music Theory _____ years used

27. New approach to art (Identify and briefly describe and indicate the length of time used.)

28. Other (Identify, briefly describe and indicate length of time used.)

II. In your judgment which two of these curricular innovations have been most effective in your school? (Use numbers on previous pages to identify your choices.)

Number _____ Number _____

III. Place the numbers chosen in answer to question II in front of the phrases below that describe your method of implementing the two most effective innovations.

Staff Utilization

- A. Team or cooperative teaching
 - B. Team supervision (team members observe, critique one another)
 - C. Research and development specialist
 - D. Teacher aides, ally readers, student aides
 - E. Team, department, or school head
 - F. Other (describe) _____
-

Procedures (methods)

- A. Seminars, problems
 - B. Advanced placement
 - C. Independent study, individualized instruction
 - D. Programmed learning, teaching machines
 - E. Language labs
 - F. Work experience, apprenticeships
 - G. Correspondence study
 - H. Other (describe) _____
-

Organization (students)

- A. Multi-track
 - B. Continuous progress
 - C. Separate schools
 - D. Flexible size group
 - E. Seminar, tutorial
 - F. Acceleration
 - G. Other (describe) _____
-

Scheduling (time)

- A. Individual -- day by day, week by week
 - B. Modular scheduling
 - C. Drop a day
 - D. Extended day--week--school year
 - E. Block
 - F. Other (describe) _____
-

Facilities

- A. School or departmental resource centers, teacher work rooms
 - B. Electronically equipped study carrells
 - C. School, departmental or team conference centers
 - D. Large and small group instructional centers
 - E. Open laboratories, student work rooms
 - F. Other (describe) _____
-

Student enrollment

Number of students involved in each of the two innovations indicated
in II on page 3:

<u>Innovation Circled</u>	<u>No. of Students Involved</u>
<u>Innovation Circled</u>	<u>No. of Students Involved</u>

IV. How were the teachers involved in the planning of these innovations?

V. What means of teacher preparation was used to implement the innovations?

VI. Who is responsible for evaluating innovations within your school?

VII. What innovations have you tried and later abandoned? Why?

VIII. Have you an idea for an innovation which you believe would improve the working of your school? Please describe.

Person Reporting _____

Position _____

APPENDIX B
MINUTES OF THE MEETINGS
DEVOTED TO THE SURVEY

MINUTES
CURRICULUM AND EDUCATIONAL DEVELOPMENT COMMITTEE

September 23, 1967

Meeting was called to order by Chairman James Wood of Sidney. Introductions were made of those present:

Mrs. Pat Stevens of Fort Benton, Curriculum Coordinator; Mr. Carl Hansen, Montana Center for the Physically Handicapped at Eastern; Dr. Linus Carleton, Assistant Dean of Education at Missoula.

The meeting opened with general discussion about the areas that have been covered by the committee. The most recent study, "Slow Learner," was turned over to the Montana Reading Council because it was so directly related to reading.

The last study made by the committee began with a survey of curriculum coordination in 25 schools. A report of this study was given to the 1967 Delegate Assembly by Gerald Roth. It was recommended that Mr. Roth be contacted to see if he would give the information he had received to the committee for review and further study.

After some discussion it was recommended that the committee survey the whole state with respect to "curriculum innovations" in the various schools. After such information is compiled, a current file will be maintained in the MEA office so it will be available to others.

Further suggestion was made to call upon the colleges to see if they might have a graduate student who would be interested in developing an instrument to conduct the survey and compile the information. Chairman Wood will write letters to the Deans of Education at Eastern, Western, Montana State University and University of Montana.

A meeting has been called for November 4 to identify the problem to the students and review what the committee wants included in the instrument. It is hoped that the students might be able to use the information as a basis for a thesis in their graduate program.

There being no further business the meeting adjourned.

CURRICULUM AND EDUCATIONAL DEVELOPMENT COMMITTEE

December 9, 1967

The meeting convened at 9:45 a.m., December 9, 1967, with James Wood, chairman, presiding. Members present at the meeting were Francis Olson, Carl Hansen, Patricia Stevens, and Linus Carleton. Maurice J. Hickey, staff consultant, and two University of Montana students, Marilyn Lind and Don Welti, were also present.

Chairman Wood began the meeting by relating the ideas about curriculum innovations discussed during the first meeting for the benefit of the new committee member, Mr. Olson, and the two University students. Discussion centered around the purpose of the study and guidelines that would bring about the desired results.

The purpose of the study was stated as follows: The Curriculum and Educational Development Committee of the MEA, recognizing there are changes taking place in curriculum, is seeking to find curriculum innovations in Montana schools that show some departure from the traditional program.

With the above purpose in mind, the following guideline questions were developed:

1. What new or additional courses have been added?
2. What innovations have been made in existing courses?
3. What uses are being made of various types of media or of para-professionals?
4. What changes are being made in facilities? New construction?
5. Are there any changes in staff preparation to bring about these curriculum changes?
6. Have you changed staff organization in any way that effects the curriculum?
7. What is the future of this program?
8. What are you planning for the future?
9. Would you allow the students to observe your program if it is desired?

GENERAL GUIDELINES:

The students who are involved in the program on each campus will develop an instrument around the guidelines and one final instrument will be drafted in Bozeman on January 20. The final instrument will be sent to the MEA Office for mailing to school administrators and small school principals in the state. Each unit of the University or the students involved will be responsible for return envelopes to be inserted with the original mailing of the instrument.

It is recognized that if there are only two students, the decision as to how much use is made of the guidelines will have to be left to the students and the advisor.

MINUTES
CURRICULUM AND EDUCATIONAL DEVELOPMENT COMMITTEE

January 20, 1968

Meeting was called to order at 10 a.m. on January 20 by Dr. Linus Carleton who presided in the absence of Chairman James Wood.

Chairman Wood had indicated at the December meeting that it wouldn't be necessary for all Committee members to be present for the January 20 meeting as general guidelines for the instrument to be used in the survey of curriculum innovations in Montana schools had already been agreed upon. Introductions were made of those present: Committee members Dr. Linus Carleton and Carl Hanson; Mrs. Marilyn Lind and Don Welti, graduate students from the University of Montana; Harold J. "Buck" Gaustad, graduate student from Montana State University; and Gile Mitchell, graduate student of Western Montana College. Maurice J. Hickey, staff consultant, was also present.

The meeting was called to review and finalize the instrument to be used in the survey. Mrs. Lind and Mr. Welti presented drafts of an instrument to be considered by those present. The instrument has two parts - one to cover the elementary program grades (1-6), and the other to cover the secondary program grades (7-12).

After reviewing the proposed instrument and making some changes, they were approved. Mr. Gaustad requested time to check some of the points to be raised with some local educators in Bozeman. Further changes are to be sent to Dr. Carleton by January 31, 1968.

Also considered was how much of the state is to be covered, and the areas that each party would survey. The state was divided into four areas from north to south and the following counties were assigned:

Mrs. Lind and Mr. Welti will tabulate and prepare a thesis on the results of their survey of the western area consisting of the following counties: Ravalli, Granite, Powell, Lewis and Clark, Teton, Pondera, Liberty, Toole, Glacier, Missoula, Mineral, Sanders, Lake, Flathead, and Lincoln.

Mr. Mitchell will survey and tabulate the results for Hill, Chouteau, Cascade, Judith Basin, Meagher, Broadwater, Jefferson, Silver Bow, Deer Lodge, Madison, and Beaverhead counties.

Mr. Gaustad is to survey and tabulate the results for Blaine, Phillips, Fergus, Petroleum, Wheatland, Golden Valley, Musselshell, Sweet Grass, Stillwater, Park, and Gallatin counties.

Two graduate assistants from Eastern Montana College will survey and tabulate the eastern area consisting of the following counties: Sheridan, Daniels, Valley, Roosevelt, Richland, McCone, Garfield, Prairie, Dawson, Wibaux, Fallon, Carter, Powder River, Custer, Rosebud, Treasure, Big Horn, Yellowstone, and Carbon.

Each party doing the survey will furnish sufficient self-addressed stamped envelopes to the MEA office where the final form of the instrument will be printed and mailed to principals and superintendents of town schools. Where towns are known to have several schools, a survey will be mailed to each building principal.

If a follow-up is necessary, the committee agreed that the individuals conducting the survey in each area would be responsible for it. These individuals are responsible for tabulation of the results in their area and after their use of the data is satisfied, a copy of the paper or thesis is to be forwarded to the MEA office which will serve as a repository for this information.

O p.m.

APPENDIX C
LETTERS TO ACCOMPANY INSTRUMENT

Curriculum Association

1232 East Sixth Avenue
Helena, Montana 59601

Telephone 442-4250

February 5, 1968

Dear Sir:

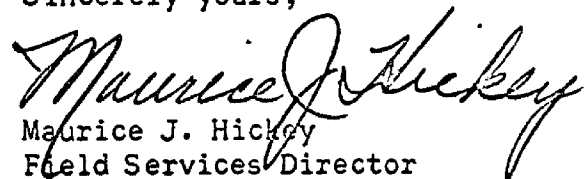
Questionnaires were mailed today to your elementary, junior and senior high school principals. Each individual is requested to answer it for his school.

This program is the one that I made reference to in Great Falls at your administrators' meeting.

The study is being sponsored by the Curriculum and Educational Development Committee of the MEA. Graduate students will write theses as a result and the MEA will serve as a repository for the compiled information. A brief summary of each division of the state as well as a summary of the state will be available.

I hope you will urge your principals to return the survey as quickly as possible.

Sincerely yours,


Maurice J. Hickey
Field Services Director

MJH/at

Education Association

1232 East Sixth Avenue
Helena, Montana 59601

Telephone 442-4250

February 5, 1968

Dear Principal:

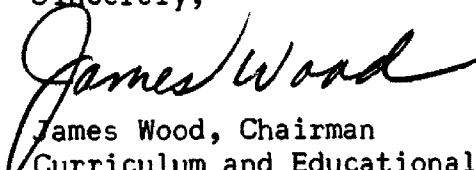
The enclosed questionnaire was designed by two graduate students from the University of Montana aided by the MEA Curriculum and Educational Development Committee and graduate students from Montana State University and Western Montana College.

The state has been divided into four areas and the information will be compiled at Eastern Montana College, Western Montana College, Montana State University, and the University of Montana. The questionnaire is being sent to all building principals and superintendents of town and millage schools in the state. We urge everyone to fill it out and return it as quickly as possible.

The results of the survey will be available in many forms: brief summaries of the four areas surveyed and a final summary for the entire state. The MEA will be a repository for many of the innovations and brief reports will appear in the MEA Journal and the news edition.

Please encourage each of your colleagues in your system to answer and return the questionnaire as soon as possible.

Sincerely,


James Wood, Chairman
Curriculum and Educational
Development Committee

Enclosures



UNIVERSITY OF MONTANA
MISSOULA 59801 PHONE 243-0211

SCHOOL OF EDUCATION

February 29, 1968

Dear Principal

The questionnaire "Survey of Curriculum Innovations in Montana Public Schools" which was sent to you February 5 has not been received in our office.

To accurately report on the innovative practices in Montana it is essential that we receive replies from every school in the state.

We have enclosed an additional questionnaire for your use if the original has been misplaced.

Please complete and return the questionnaire as soon as possible.

Sincerely yours

Marilyn Lind

Donald Welti

l jg

Enclosure: Questionnaire

N.B.

These two graduate students are working hard on these data as a basis for masters' theses. They are working under my supervision. I will be grateful to you for supplying the information they request. I know you are busy, but hope you will spare the time to help with this important project. Time is important since he has to get tabulations made within the next two weeks.

Linus J. Carleton
Professor of Education



UNIVERSITY OF MONTANA
MISSOULA 59801 PHONE 243-0211

SCHOOL OF EDUCATION

February 29, 1968

Dear

I appreciate your prompt reply to our questionnaire on "Survey of Curriculum Innovations in Montana Public Schools." However, in order to make our study reliable and exact we need more complete information on _____

of your questionnaire. Would you please fill in the needed information and return it as soon as possible.

Thank you for your time and cooperation.

Sincerely

Donald Welti

DW/ljg

N.B.

Don Welti is doing this research under my direction as a part of his master's program. I urge that you provide all variable help in supplying complete data. Time is of the essence since they are trying to meet an early deadline on their theses.

Linus J. Carlton
Professor of Education

APPENDIX D
TABLE OF INNOVATIONS

TABLE X
 TABULATION OF INNOVATIONS REPORTED BY
 HIGH SCHOOLS IN FIFTEEN COUNTIES
 IN NORTHWEST MONTANA

Innovations reported	Number of schools
<u>In the field of science</u>	
Geo-science or earth science	21
BSCS biology	15
PSSC physics	8
Chem study	8
CBA chemistry	3
Bacteriology	1
Ecology	1
Advanced biology	3
Physical science	1
Outdoor conservation	1
Physiology	1
Conservation and wildlife study	1
Total	64
<u>In the field of mathematics</u>	
Modern algebra	30
Advanced math	3
Algebra--8th grade	1
Pass-fail algebra	1
New approach to mathematics	1
Consumer math	1
Total	37
<u>In the field of inter-group relations</u>	
Family living	13
Consumer education	4
Intragroup dynamics	3
Contemporary problems	1
Current social problems	2
World geography	1
Political geography	1
Indian history	1
Sociology	1
Business law	1
Personal and family survival	1
College Sociology Course	1
Total	30

TABLE X (continued)

Innovations reported	Number of schools
<u>In the field of English and related subjects</u>	
Remedial reading clinics	16
Speed reading	8
Humanities	3
Advanced composition	1
Contemporary literature	2
Lay reader	2
Speech	1
Journalism	1
Total	34
<u>In the field of technical training</u>	
Welding	5
Electronics	4
Small motors	3
On-the-job training	2
Drafting	2
Farm mechanics	1
Metals	1
Woodworking	1
Pre. trades	1
Total	20
<u>In the field of home economics</u>	
Home economics of some type	10
Boys home economics	3
Clothing	1
Planned parenthood	1
Total	15
<u>In the field of vocational agriculture</u>	4
Total	4
<u>In the field of commercial subjects</u>	
Office machines and secretarial	7
Office machines and data processing	4
Typing	4
Shorthand	2
Retailing and merchandising	1
Stenography	1
New approach to commercial subjects	1
Total	20

TABLE X (continued)

Innovations reported	Number of schools
<u>In the physical education and leisure time field</u>	
Gymnastics	3
Girls track	2
Physical fitness	2
Sex education	2
Bowling	1
Social dance	1
Drivers education	<u>1</u>
Total	12
<u>In the field of music and art</u>	
General music	7
Music theory	6
New approach to art	5
Music appreciation	1
Art--all phases	3
Creativity and new art media	<u>1</u>
Total	23
<u>In other areas</u>	
Library instruction in specific classes	1
Summer programs	1
Programmed learning	<u>1</u>
Total	3
GRAND TOTAL	262