

II. Open plan schools

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Elementary Open-Space Schools: Administrator and Teacher Perceptions

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**Iowa State Department of Public Instruction
and The University of Iowa**

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CHAPTER ONE

INTRODUCTION

The most dramatic innovation in the field of school architecture in the last century is the concept of open-space. Since its introduction in the late 1950's, this idea has spread throughout the United States and Canada, and the concept has been used in the construction of school facilities at every level. This is especially true of elementary schools which have made widespread use of open-space both in remodeling and new construction.

Every year the American Association of School Administrators prepares filmstrips of selected schools for presentations at their meetings. Mills (1972) reported that a review of these filmstrips for the years 1960-1969 revealed that the number of open-space buildings chosen for these presentations varied from none in 1960 to fourteen in 1969, and of those fourteen, eleven were elementary schools. This trend toward increased use of open-space in school construction is supported by the results of a survey of state directors of school planning services of the fifty states and the District of Columbia which was conducted by the School Planning Laboratory of the School of Education, Stanford University in 1970. The survey covered the three year period from 1967 through 1969. The results indicated that over 50 per cent of the schools constructed in the United States during that period were of open design. Responses varied greatly from state to state with some reporting no open-space buildings to others like California and Wisconsin which reported the use of open design in over 80 per cent of their new schools (SPL, 1970).

Further evidence of the trend toward open-space was reported by Brunetti (1971) in an analysis of the school in the Architecture Exhibit at the 1971 AASA convention. Open-space dominated the exhibit with 91 per cent of the elementary schools, 66 per cent of the middle and junior high schools, and 39 per cent of the senior high schools using open-space design. The popularity of open-space at the elementary school level was evidenced by the fact that only 9 per cent of the elementary buildings were of conventional design compared to 61 per cent of the buildings at the high school level.

Since 1964 the publication, Nations Schools, has presented a description of "Award Winning Schools" as one of its annual features. These schools were screened from the hundreds of entries submitted every year for the Architecture Exhibit at the AASA convention. The schools designated as "Award Winning Schools" were among those chosen to receive citations for design excellence by a special AASA architectural jury (Nation's Schools, 1970). In the ten year period starting with 1964, 161 of the 202 schools selected, or 80 per cent, had some open design features. Yearly figures are shown in Table 1. The years 1964-1971 were reported by Mills (1972), and the years 1972 and 1973 were researched by the present investigators. Nations Schools discontinued the "Award Winning Schools" program in 1974.

TABLE 1

NATIONS SCHOOLS - "AWARD WINNING SCHOOLS"
ELEMENTARY SCHOOLS

1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
O ^a T ^b	O T	O T	O T	O T	O T	O T	O T	O T	O T
5 12	6 12	10 10	11 12	3 5	10 11	6 6	8 8	8 8	7 7

^a"Award Winning Schools" with flexible open spaces

^bTotal number of "Award Winning Schools"

The table shows that the trend toward open design has been especially strong at the elementary school level with 100 per cent of the winning schools being of open design during the last four years of the program. Further investigation revealed that this trend was accompanied by an increasing tendency to build the instructional areas of elementary schools with no interior partitions other than those provided by movable cabinets, bookcases, chalkboards, and other such flexible and temporary arrangements.

Several times during the year Nations Schools also presented a "School-of-the-Month" award. These schools were selected by a committee representing the Council of Educational Facilities Planners. Since the program began in 1964, seventy-one of the eighty-four, or 84 per cent of the schools selected were of open design. The data for the years from 1964 through 1972 is shown in Table 2. Mills (1972) reported the information for the years 1964-1971. The data for 1972 was researched by the investigator. The "School-of-the-Month" program was terminated by Nations Schools in 1973.

TABLE 2

NATIONS SCHOOLS - "SCHOOL-OF-THE-MONTH"
ELEMENTARY SCHOOLS

1964	1965	1966	1967	1968	1969	1970	1971	1972
O ^a T ^b	O T	O T	O T	O T	O T	O T	O T	O T
1 4	4 4	0 0	6 7	6 6	4 4	4 4	5 5	5 5

^a"School-of-the-Month" with open-space design

^bTotal number selected for "School-of-the-Month"

As has been the case with so many other innovations in education, there is no clear-cut definition for open-space. In recent years the word "open" has become something akin to a magic word in education. It is not uncommon to come across references and articles about open education, open classrooms, open curriculum, open environment, and open schools in current educational literature. Consequently, the term "open-space" is frequently confused with these other types of openness. In fact, some proponents of open-space insist that it cannot be separated from many of these other aspects of openness in education. They contend that the term "open-space" refers not only to an architectural design and a type of school construction but also to the organizational and instructional implications of that type of construction. Pino (1970), a pioneer in open-space, stated that the term was a misnomer in that all space is both open and self-contained and that all that was really being constructed were larger self-contained spaces. He said, "Open space is not just the building. What we really want to do is get away from the jail-like existence that we have been building. We want to create a more human and a more free environment." Staples (1971), another proponent of this more inclusive definition of open-space said:

The open-space plan in education reflects an attitude rather than a mere physical arrangement--an approach to teaching rather than a facility . . . Of the two elements comprising the term "open-space", "open" is the more basic and significant concept.

In addition to the confusion created by the frequent and varied use of the word "open" in the literature and the contention that the building cannot be separated from the activities which occur within it, the problem of arriving at a clear definition of open-space is compounded by the fact that the term "open-space" is not used exclusively in referring to the concept. Some writers call it open-plan while others refer to it as open-concept or open-area. Frazier's (1972) summation explained the situation well:

It may be well to remind ourselves that accounts of open space schools sometimes use other expressions containing the word "open" to describe their schools. Occasionally, the substitute expression may refer to other kinds of openness actually present in the situation. More often than not, however, the users are merely seeking some kind of presumably synonymous way of avoiding the overuse of "open space" in their reports.

Many writers define open-space literally, i.e., in terms of physical space. Frazier (1972) defined open-space as any space built to house fifty or more children or two classes plus. He said, "Open space may be related to other kinds of openness, but our use of the term will not presume their presence." A similar definition was reported by Myers (1971):

In British Columbia during the past several years "Open Area" classrooms have become increasingly popular. The term, as used in British Columbia and other provinces, refers to two or more groups of young people housed in an area without walls separating the group. The absence of walls is the only indispensable condition for the creation of an Open Area classroom.

Many investigators have used the definition devised by Brunetti (SPL, 1970). He said, "Generally open-space has come to describe schools lacking interior partitions in which the visual and acoustical separations between teaching stations or classroom areas is limited or eliminated."

Whereas there appears to be confusion and disagreement in the literature regarding the definition of open-space, such is not the case insofar as the purposes of the innovation are concerned. This is not to say that there is complete accord among writers in the area, however, their differences are related more to emphasis than to the purposes themselves. In a discussion of the purposes of open-space, Brunetti (SPL, 1970) stated:

Basically three general goals have emerged: (1) to better meet individual student needs through more sensitive grouping and instructional approaches; (2) to make better use of teacher time and talents through co-operative organization and (3) to allow for immediate, short-range, and long-range changes in the organization and use of space.

The answer to "why open-space" given by a comprehensive report on the subject prepared by the American Association of School Administrators focused on the learner and regarded open-space as a tool to increase individualization (Open Space Schools, 1971). However, one can see the agreement between the general purposes given by Brunetti and those of the AASA in the following statement:

Working with other professionals, paraprofessionals, and aides in developing and sustaining a program that meets the requirements of each individual student takes determination, dedication, perseverance, and team spirit. . . . But the open space school does provide one means --an effective means--of facilitating individualized learning. It does provide flexibility for still unknown future changes in educational programs. It does create a more spacious and more adaptable, a less restrictive and less rigid learning environment. It does encourage a more fluid kind of teaching and learning process.

According to Pino (1970), the purposes of open-space are, again, similar to those previously mentioned. However, he placed an emphasis on the teaching/learning climate and the affective domain. His list of purposes included individualization of instruction; increased learning in the affective and cognitive areas; increased staff improvement through co-operative teaching efforts; increased flexibility of facilities, equipment, and furniture; and reduced cost of new construction and renovation.

In Schools Without Walls (1965), the first major work on open-space schools, Farmer and Weinstock (1965) stated:

The major aim in these open-space schools is to provide an environment which encourages greater interaction between teacher and pupil, and between teacher and teacher. There are no partitions to fragment learning by dividing teachers, children, and subject matter into tight standardized compartments. And there are no halls to funnel children from compartment to compartment at the arbitrary dictate of a bell. Each child finds his own place, creates his own path.

From the examples given above, it can be concluded that there is considerable agreement in the literature concerning the purposes of open-space. The key concepts are individualization, cooperation, and flexibility.

Need For the Study

The literature contains an answer to the question "why open-space", however, one cannot assume that the purposes drawn from that source are universally accepted. Are they supported by those most closely associated with the innovation? What do the teachers and principals of open-space schools perceive the purposes to be? Cheek (1970) surveyed 129 randomly selected teachers in seven open-space schools in California and found no agreement among teachers as to the exact purpose for using the open-space concept in the elementary schools.

In a commentary on education in the decade of the sixties, Trump and Georgiades (1971) said that the flow of federal money during that period stimulated numerous so-called innovations and caused considerable "shuffling of feet" and "verbalizing" but little else because changes in education, no matter how sweeping, profound, or ideal, are barren unless they bring about changes in the classrooms, and there is increasing evidence to indicate that the shuffling of the sixties produced few changes in classrooms. Goodlad (1970) conducted a study which involved interviews and observations in 150 classrooms in 26 school districts throughout the United States. Following is one of his conclusions:

A very subjective but nonetheless general impression of those who gathered and those who studied the data was that some of the highly recommended and publicized innovations of the past decade or so were dimly conceived and, at best, partially implemented in the schools claiming them. The novel features seemed to be blunted in the effort to twist the innovation into familiar conceptual frames or established patterns of schooling. For example, team teaching more often than not was some pattern of departmentalization and non-grading looked to be a form of homogeneous grouping.

The purpose attributed to the non-graded and team teaching organizational structures in the literature presumably formed the basis for Goodlad's (1970) judgments of those innovations in the schools in the study because he referred to the flexibility normally associated with them.

There have been many studies comparing various aspects of the open-space school with those of more traditional schools, but the writers were unable to find any research similar to Goodlad's in which what exists is compared with what should be. Neither were the writers able to locate anything in the literature which dealt with the "should be" aspect of open-space from the participants' point of view. There is a need for an assessment of the view of teachers and principals of open-space schools on the purposes of open-space. When the measure of "normality" that Goodlad used is applied to open-space, there should be some practitioner input into what constitutes that "normality". Unlike the investigation conducted by Goodlad, it will not be the purpose of this study to determine whether or not open-space schools are living up to expectations, but rather, its purpose will be to attempt to establish what the professionals working in these schools feel the expectations should be.

Statement of the Problem

A review of literature on open-space schools revealed that (1) writers generally agree on the purposes of open-space, and (2) there is no evidence that the practitioners' point of view of the purposes of open-space schools has been determined. The purpose of this investigation will be to determine what the professionals working in open-space elementary schools consider to be the purposes of those schools by measuring their reactions to statements relating to purpose extracted from the literature on open-space schools. The following null hypothesis will be tested:

There will be no significant differences in the reactions of the professional staff members of open-space elementary schools to statements relating to purpose which include the term "open-space" and their reactions to these same statement when the term "open-space" has been deleted.

CHAPTER TWO

REVIEW OF LITERATURE

Introduction

This section will review the literature on open-space schools and will be organized in the following manner. The first section will briefly trace the historical development of elementary school buildings in America prior to 1950. The second part of the chapter will deal with the evolution of open-space in the construction of elementary schools. The final section will present research on open-space which will be divided and discussed according to the following: organization and administration, teachers and teaching, and students and curriculum.

Historical Review of Elementary School Buildings Prior to 1950

The idea that all children should be provided with schooling at the expense of the community originated in Colonial America very early in our country's history. The "Old Deluder Satan" Act which was passed by the General Court of the Massachusetts Bay Colony in 1647, not only was the first law of its kind in the history of the world, but it also foreshadowed, on this continent, the development of a plan of public education unique in the world. Schools had existed in the colony prior to this time because the Puritans believed that the Bible was the guide to salvation and that schools should be established to teach children to read the Bible, but the passage of "Deluder Satan" made it mandatory for all the towns to provide schooling to the children of the community. The details of erecting buildings, levying school taxes, and hiring teachers were left to the citizens of the various towns (Ragan and Sheperd, 1971).

Initially, school groups were small and classes were held in the teacher's house, but as the towns became larger, the groups outgrew private homes, and separate facilities were erected at public expense. The first schoolhouse on record built with tax money was a crude one-room structure which was considered useless for any other purpose. Writing shelves which ran the length of each wall, benches, and a teacher's lectern made up the building's furnishings (Ledbetter, 1969).

As the colonies grew and prospered, people moved from the towns to develop land in the surrounding countryside. This gave rise to the practice of establishing school districts which resulted in a decline in the quality of education because the districts were unable to maintain schools of the same quality. When the Revolution began, New England had poorer schools than those which had existed there a century earlier (Ragan, 1971). Outside New England, colonial legislatures showed little interest in education, consequently, school buildings continued to be crude structures which were poorly lighted and heated, contained a bare minimum of furnishings, and were completely lacking in comfort of any kind.

National independence did little to change governmental attitudes toward education. Many of the influential leaders of the time were not in favor of free, universal, public education, therefore it was given a low priority during the early days of the republic (Ragan, 1971).

The early 1800's saw the introduction of the Lancasterian monitorial system in schools in some of the larger cities of the country. In some respects these schools were the forerunners of the open-space schools of today, and like the open-space movement, the Lancasterian monitorial system brought about some changes in educational thought. Frazier (1972) has given us a good description of these schools:

Year by year, the halls where the children of the poor were being newly assembled seemed to have grown larger. The use of older students as tutors each with as many as ten younger pupils in tow, made it possible for a strong-willed teacher to direct the lessons of hundreds of children at one time, creating a situation that visitors new to these schools found hard to encompass. Seated at benches down the middle of long halls or racked up out of the way on risers all around a great study room, the children seem to have been kept well occupied.

Ragan (1971) said that in order to get any system of public education established at that time, it had to be inexpensive. He said:

As late as 1834, Philadelphia had an average of 218 pupils per teacher, and the annual per pupil cost was only five dollars . . . By the middle of the nineteenth century, the people were looking for something better, and the enthusiasm for the monitorial system began to wane. It had, however, served a useful purpose by getting people accustomed to having tax-supported schools for their children to attend.

Schools using the monitorial system needed especially large facilities, but the average schoolhouse of the period was a one-room structure containing about 900 square feet. All the desks and chairs were usually of one size and were securely fastened to the floor. The interiors of these schools were often unpainted bare clapboards and must have been terribly uncomfortable for the learner (Moyer, 1972).

Another significant development of the early nineteenth century was the beginning of the high school. The first high school in America was founded in Boston in 1821. It was called the English Classical School, a name that was later changed to English High School. In 1827, the state of Massachusetts passed a law requiring towns to establish high schools, and by mid-century there was more than 300 high schools in the state (Ledbetter, 1969).

The introduction of the high school, coupled with the increasing population of urban centers, brought about a change in the organization of the public schools. In cities which had both grammar schools and high schools, a plan of organization was necessary in order for students to be able to make a smooth transition from one to the other. A graded system gradually evolved which made it possible for progress to be checked and for all students to proceed through the various levels according to a similar pattern (Wise, 1970).

It was during this period that the most enduring design in American school architecture was developed. In 1848 the Quincy Grammar Schools was built in Boston. This school exemplified a new architectural approach to school design and established the box-shaped classroom and the egg carton interior design as the standard for school architecture in this country for more than a century (Moyer, 1972). In the Quincy Grammar School, children were sorted into grades and then into classes of about fifty-five students. Each of these classes met in a classroom twenty-six feet wide and thirty-one

feet long. The building itself consisted of three floors with four identical classrooms on each floor (Mills, 1972). A fourth floor contained an assembly hall for devotional services and other general exercises (Moyer, 1972).

Ledbetter (1969) reported that the school buildings of latter half of the nineteenth century might best be described as imposing edifices said to express refinement, public spirit, and community tastes. He said, "A school official of the period suggested that the lack of money and interest in education earlier was made up for in educational palaces." However, while changes occurred in the exterior appearance of the schools, box-shaped classrooms arranged in an egg carton pattern continued to dominate the interior design.

By 1876 the principle of public elementary education had been accepted in all states except those of the Deep South where post Civil War economic conditions left many communities too poor to support schools. The next fifty years was a period of expansion and reform in elementary education (Ragan, 1971). During the early years of this period several factors encouraged the entrenchment of the regimented, undemocratic program of elementary education which had been imported from Europe earlier. Ragan (1971) stated:

One factor was the rapid growth of high schools, which by various means managed to impress upon the elementary schools the necessity for pupils to master a standardized list of facts and skills as preparation for entrance to high school. A second factor was the mechanistic stimulus-response psychology that emphasized repetition as the means of learning and the reproduction of the material learned as the proof of learning. A third factor was the influence of the factory ideal on school practice.

Although there would be differences in a comparison of the typical elementary school education of 1880 with that of 1930, the changes that created those differences came about very slowly and had little effect on building design. Macbeth said that if a school building reflects the educational program housed in it and if the building design is developed from the architect's interpretation of educational needs and specifications, then it would appear that little changed in education from 1850 to 1950 (Macbeth, 1971). He further stated:

There are exceptions, but schools built in this 100 year period were amazingly alike in their interior spaces. Except for the use of new building materials, the inclusion of some special subject area spaces, the building of more one-story schools, and the movement of toilet rooms to more respectable first and second floor locations, school buildings constructed near the middle of the twentieth century were much like those constructed at the middle of the previous century.

The changes that occurred in elementary education and in the interior design of school buildings during this period can be attributed to educational reformers who were influenced by the philosophies of men like Johann Herbart and Friedrich Froebel. The most influential of these reformers was John Dewey, and the best known of his ideas of methodology,

the one which was influential in changing some aspects of school design, was his principle of learning by doing. He taught that the active side of the child's development preceded the passive side, that movement came before conscious sensations, and that muscular development came before sensory development. He believed that neglect of these principles caused a great deal of friction in school work (Ragan, 1971). Wise (1970) stated:

Several changes in school facilities had to be made to be able to follow Dewey's suggestions as his philosophy gained influence. The belief that students should be involved in learning activities meant that more space and more flexibility was necessary. Classrooms were enlarged from the old standards of about 700 square feet per teaching station to 900 or 1000 square feet with an average of about 30 square feet per pupil. Class sizes were lowered to about 30 students in each group. Furniture was no longer fastened to the floor so more varied activities could be conducted.

Classrooms became larger, but the egg crate design was maintained.

The schools of the thirties and early forties continued to reflect a greater interest in outward appearance than in interior design. In discussing school buildings of this period Wise said, "Literature of the period suggested safety, adequate natural light, ventilation, practical economy and impeccable architecture as important principles applicable to all school buildings." (Wise, 1970) There was a general concern among both architects and educators as to the best way to provide for additions to buildings as the population increased. After considerable trial and error, it was decided that the greatest economy of space and material could be realized by designing schools in the shape of the letters W, H, I, L, T, and U (Moyer, 1972).

The period immediately following World War II saw renewed interest in education in the country. State programs of consolidation increased the school populations in towns and cities and created the need for additional classrooms. Buildings were generally constructed on the finger plan with two or more wings of double-loaded corridors having uniform classrooms on each side. The extensive use of glass in exterior walls was a common practice due to the belief that the greatest possible amount of natural light should be allowed in study areas. The only ventilation was provided by opening windows or doors, and an even temperature level was difficult to maintain (Ledbetter, 1969). Since the instructional program at all grade levels was based on group instruction and a uniform time schedule, the egg crate pattern continued to dominate interior design. The traditional building was well suited to the educational program, and there was no need to change it (Macbeth, 1971).

The war had caused changes in the attitude of the public toward education, and teaching had risen to a new position of importance and recognition in our culture. During the next ten to twenty years, education enjoyed almost unanimous support. Funding was not a problem, and bond issues for new construction passed in state after state with little trouble. Educators and architects began to consider the needs of students in school designs, and greater consideration was given to the type of program being carried on in the building. These and other changes, especially in methodology and organization, resulted in the events which finally broke the hundred year grip of the traditional Quincy egg crate pattern on the interior design of American elementary schools.

Evolution of the Open-Space School

The events which culminated in the construction of open-space schools, and the factors which contributed to the evolution of that type of school design can be traced back to the ideas of Rousseau, who in 1762 stated in his famous work, Emile (Foxley, 1911):

Teach your scholar to observe the phenomena of nature; you will soon rouse his curiosity, but if you would have it grow, do not be in too great a hurry to satisfy this curiosity. Put the problems before him and let him solve them himself. Let him know nothing because you have told him, but because he has learned it for himself. Let him not be taught science, let him discover it. If ever you substitute authority for reason he will cease to reason, he will be a mere plaything of other people's thoughts . . . not only is our reason not accustomed to slavish submission to authority, but we develop greater ingenuity in discovering relations, connecting ideas and inventing apparatus, than when we merely accept what is given us and allow our minds to be enfeebled with indifference.

Ideas such as these formed the basis for the changes in methodology and organization which created the need for alterations in the traditional interior design of school buildings which resulted in the concept of open-space. Ackerman (1969), an architect, said:

The architectural client has to formulate the beliefs and aspirations of his institution for practical as well as for spiritual or aesthetic reasons . . . The only way we and the institution we share can make an architectural environment that says something worth listening to is to clarify for ourselves the things we believe in and then to ask our architects to translate these things into buildings.

The fifties and sixties were a time of change and innovation in elementary education. Some of the more significant of these included the use of the library as a resource center, a move toward more individualized instruction, cooperative teaching, team teaching, modification of grade level barriers, curriculum modernization, development of technological equipment for teaching, and a new emphasis on learning through inquiry rather than from lecture (Macbeth, 1971). The majority of these changes focused their attention on the individual learner, and attempts were made to break the "lockstep" of traditional patterns in favor of programs designed to produce a set of outcomes expressed as specific changes in the characteristics of the learners. This increased attention on the learner resulted in continuous progress non-graded programs developed for each individual; the team or cooperative approach to staff utilization; and flexibility in space, facilities, and materials (AASA, 1971, p. 10).

Putting new teaching and learning practices and philosophies into practice inevitably becomes a question of logistics. An educational innovation must not only be conceived, understood, and adopted at the policy level, it must also be designed to work in a specific situation, at which point many a school administrator has felt thwarted because the building would not get out of the way (Gross and Murphy, 1968).

The movement toward open-space began with the replacement of permanent partitions by movable walls. The rationale for replacement was

spelled out mainly in terms of better opportunities for teachers to work together (Frazier, 1972). In a discussion of this first phase of open-space, Frazier said:

. . . the key ideas were regular and large group instruction, exchange of children for instruction, and some use of specialized teacher competency . . . Teachers were presumed to want to work together to increase the range of competence thereby available to children. Walls between classrooms were moved back or folded out of the way whenever teachers saw some good reason for sharing their children or themselves.

Movable partitions between rooms rarely created better teaching environments, however, because rooms merely became twice as long when the partitions were opened, and the areas were still organized as separate classroom units (Macbeth, 1971).

The second phase of the open-space movement was concerned with ways to join three or more classrooms. Frazier (1972) said:

By its very nature Stage 2 involved school personnel in an active and creative collaboration with architects. The problem was one that invited ingenuity. Strange exterior shapes--circles, hexagons, shells, stars, and what looked like pinwheels--revealed the strain integral to redesign.

Classrooms were clustered around shared areas such as the library. In some cases they were set apart as a group of classrooms in a pod with some multiple use of shared spaces (Macbeth, 1971). It was assumed by Frazier (1972) that the teachers in these new clusters or pods would do a great deal of planning and teaching together. He stated:

Two teachers next door to each other might be left to decide if and when to push back the wall between them. To rely on personal relations among three, four, or perhaps six teachers as a way to inspire use of their new facility made no sense at all. Certainly a high level of expectation existed that teachers housed in pods and clusters would work as a team.

As team teaching became more popular and teachers became more skilled in working in teams, the traditional orientation to "my students" and "my classroom" shifted to "our students" and "our classroom", movable walls were left open more often than closed, and the concept of open-space was born.

The first schoolhouse to receive national attention by eliminating the walls between classrooms was constructed in Carson City, Michigan, in 1957. The plan was to establish a team-taught school which also would dispense with the conventional graded organization. Teachers were to work together with groups of children both larger and smaller than the standard class size, therefore, the pod was designed to be the size of four conventional classrooms with no partitions to obstruct the grouping and regrouping that would occur throughout the day (Farmer and Weinstock, 1965).

At about the same time that walls were being deliberately left out of the school in Carson City, a similar situation occurred in California by accident. Pino (1970) reported that in 1958 the movable walls for a new four classroom pod which was being added to a school in Lamphere, California,

failed to arrive before school opened in the fall. When the walls arrived a month or so later, the teachers requested that they not be installed.

Schools in Texas and Michigan also moved to eliminate or decrease the size and/or the number of interior partitions in the late fifties. A school in Andrews, Texas, was designed with openings to the classrooms ten feet wide with no doors. Two middle schools in Saginaw, Michigan, eliminated the walls between the classrooms and the corridors. The corridors then became a shared commons area for the school. A college, also in Saginaw, was constructed in the same way with corridors wide enough to double as lecture-seminar areas (Farmer and Weinstock, 1965).

Authorities agree that the principal reason for the open-space movement in school design was the development of cooperative and team teaching, however, another factor which gave the movement added impetus was the discovery that savings could be realized in the construction and operation of a more compact open structure.

In the late 1950's school planners began to question the appropriateness of traditional school designs both in terms of their high construction costs per unit of usable space as well as in terms of their inability to house innovative educational program (Moyer, 1972). In order to gain increased flexibility and economy, it was necessary to build fatter buildings in which a larger percentage of the available space is not directly accessible to outside walls for natural light, air, views, and exiting. Both the law and physiological requirements had prevented schools from being constructed with these kinds of spaces because daylight was considered essential, windows were needed for ventilation, people expected views of the natural environment, and existing laws demanded corridors and specific building configurations (AASA, 1971, p. 41).

An AASA (1971) publication on open-space schools provided the following solutions to the problems cited above:

1. In the past if an economical structure was to be built, spans were limited to about twenty-four to thirty feet. By the early 1960's it was economically attractive to build spaces forty to sixty feet wide and hundreds of feet long with no interrupting walls or columns.
2. Electric light is now standard, and laws in many states have been modified to eliminate legal formulas for required window areas.
3. Air conditioning makes interior spaces acceptable.
4. The need for each box-like classroom to have an outside wall of windows has been superceded by the open concept in which large spacious areas are created which can be very agreeable.
5. Many exit laws have been changed to allow large open areas.

Ledbetter (1969) cited an example of the economy of this type of construction:

For example, a vocational-technical school was first planned as a five-building campus style. Later, the building design was changed to one large building with a separate building for

aeronautical engineering because of the high sound levels. The change increased the interior space by seventeen average classrooms even though the perimeter wall length was cut almost in half. Roof area was cut by about the same amount as area was added. Exterior doors were cut from twenty-two to eight at a tremendous savings.

Whereas the demands of team teaching prompted the removal of interior walls in the Carson City, Michigan, school, the pioneering efforts of another community school district illustrate the fact that economics were also a prime factor in the development of open-space facilities. The first truly open-space facility was the four room addition to the Lewis Sands Primary Schools which was constructed in Chagrin Falls, Ohio, in 1961. Dr. Robert M. Finley, Chagrin Falls, superintendent of schools at the time, said that the idea of eliminating interior partitions completely occurred to him while he was discussing the new building with the architects in a crowded restaurant in Cleveland. He stated:

Suddenly a thought hit me. I noticed that even in a large dining area, with many other groups eating and chatting away, we had not (at least I had not) heard the other noises or chatting in the room. Nor did anyone else at our table seem bothered by the other sounds . . . If we had a money problem, which we did, why couldn't we save money by eliminating the interior partitions and substituting movable furniture? The architect assured me that we could . . . But could we work it educationally? Food for thought, and I couldn't wait to get to the office the next morning to work it out (Farmer and Weinstock, 1965).

In 1962, just one year after the construction of the Lewis Sands addition, the most influential building in the open-space movement was opened in San Jose, California. The award winning "big room" of the Dilworth School is the prototype of the jumbo classroom and was a bridge between isolated earlier examples and the current elaborations on a new accepted theme (Farmer and Weinstock, 1965). This building marked a final break from thinking of open-space in terms of equivalent classrooms and initiated the third and final phase in the evolution of open-space.

Frazier (1972) called these second generation open-space schools communities or subschools. He said:

. . . in Stage 3 of the open-space movement, classrooms as we have known them are no longer. In the process, movable walls have been abandoned . . . In schools that go all the way, all 400 or 500 children in the school may be housed in one large room. Or there may be two large rooms, a primary and an intermediate room.

According to Frazier (1972) other characteristics of these communities or subschools are:

1. Units are seen as a whole rather than as being composed of several home room groups.
2. The staff is generally augmented with aides, volunteers, and student participants and/or apprentices.

3. There is a strong likelihood of interage or intergrade populations.
4. There is heavy emphasis on individualized instruction and independent study.
5. Less time is spent in group instruction.
6. Instructional materials centers are a part of the teaching space.

Newer design configurations appeared with these second generation open-space schools. In 1965 the Valley Winds Elementary School in Riverview Gardens, Missouri, was constructed in the shape of a snail with three concentric areas which spiraled out from a central core area. Few interior walls make it possible to organize the school into learning suites of various sizes to accommodate the needs of teaching teams. The central core area was designed as a curriculum planning center for teachers and as an instructional materials center for children (Moyer, 1972). The Granada Community School in Belvedere-Tiburon, California, contains clusters of four hexagonal shaped classrooms fused into large open spaces. Demountable partitions are available, but no permanent interior walls were used (Moyer, 1972). In 1966 the Edenville Elementary School near San Jose, California, was dedicated. This school consisted of three round open-space pods which contained an area equivalent to six conventional classrooms. These three round pods surrounded a fourth open area designed for use as an instructional materials center (Moyer, 1972). The Harry C. Fulton School was constructed in Fountain Valley, California, in 1968. It consists of a central hexagon-shaped instructional materials center surrounded by six hexagonal modules, five of which contain four teaching stations each with the sixth used as an all purpose room (Moyer, 1972).

In 1969 the School Planning Laboratory of the School of Education at Stanford University conducted a study of open-space schools the first phase of which was designed to determine, among other things, trends in open-space construction. A total of 150 floor plans were analyzed to determine which trends had been established in the size of open instructional areas. Equivalent classroom spaces and designated teaching stations were the criteria used in the analysis (Brunetti, 1970). Results of the analysis revealed the following:

The most common practice has been to create instructional areas by forming "pods", "classroom clusters", or "big rooms" that accommodate a definite number of teachers and class groups, usually ranging from two to nine. Seventy-five per cent of the schools in the survey were composed of several "pods" of the same size. The most common arrangements were areas equivalent to three classrooms, followed by six, four and five in that order. Few schools were composed of instructional areas of two, seven, eight or nine equivalent classrooms. It is noted that groupings of three equivalent classrooms are more characteristic of the older schools than the newest schools.

It was also determined that eleven per cent of the schools were composed of open "pods" of variable size in various combinations such as 2-4-8, 3-6, 2-4, and 4-6 combinations of equivalent classrooms, and fifteen per cent of the schools were composed of large areas of undifferentiated space equivalent to ten or more classrooms. Schools in the latter group were among the newer schools in the sample (Brunetti, 1970).

The evolution of the open-space school was influenced by a variety of factors, not all of an educational nature. Brunetti (1971) found that by studying school districts that had experience with several open-space schools, and by isolating specific schools at various time intervals throughout the eight to ten year period immediately preceding 1970, a developmental trend could be identified. He concluded that space had been basically affected by the changing characteristics of three functional requirements found in most open-space programs; the need for variable size groups, the need for variable instructional materials and methods, and the need for variable staffing patterns. Not all open-space schools resulted from planning based upon well developed philosophies, values, attitudes and goals, however. Some school superintendents adopted open-space in an effort to reduce the rising costs of school construction while other jumped on the open-space bandwagon because of trends in neighboring school districts according to Brunetti.

Initially open-space was a simple modification of the self-contained classroom. Several classrooms were combined into open "pods" or "big rooms" to accommodate several class groups and teachers. Although the open areas of the Lewis Sands Primary School and the Dilworth Elementary School, two of the earliest to utilize open-space design, were completely open, many of the first open-space schools were essentially conventional buildings in which permanent interior walls were replaced by folding partitions. The size of most of the open instructional areas was based on the number of teachers in the teams which were to work in the areas (Brunetti, 1971).

A common modification of some "first generation" open-space schools was the inclusion of commons areas, activity centers, or resource centers. These added space to the classroom clusters and were used as satellite libraries which brought resources closer to instruction, or as extensions of existing learning areas allowing for the accommodation of a greater diversity of learning activities, or as buffer zones to separate class groups (Brunetti, 1971).

Some of the more recent or "second generation" open-space schools are composed of large areas of undifferentiated space that can accommodate the entire student body and teaching staff (Brunetti, 1971). Thus, over a period of less than fifteen years has evolved the open-space school, the first major change in elementary school design in America in over a hundred years.

Related Research

Due to its relatively short history, the amount of research related to the concept of open-space in school design is limited. In many studies the open-space aspect of the investigation was of secondary importance with the prime focus of the study being some other facet of educational practice. That facet most commonly paired with open-space was team teaching, which was to be expected since open-space design originated in response to the demands of that instructional innovation.

The research on open-space design can be divided into studies related to the organization and administration of the school, studies dealing with teachers and teaching in open-space, and studies related to students and curriculum in open-space. The remainder of this chapter will be organized according to those divisions.

One of the features of open-space schools which gave rise to considerable concern and controversy was the lack of windows. Due to the limited amount of wall space available, window space is either drastically reduced or completely eliminated. Lutz investigated this condition in an underground school building in Artesia, New Mexico, and found no differences in pupil achievement, pupil behavior, or in teacher attitudes which could be attributed to the lack of windows (Reida, 1965).

Another feature which was the object of considerable discussion and study was the lack of interior partitions and the effects of the visual and auditory distractions resulting from their absence. In a study of the attitudes of the major users of an open-plan school in Florida, Justus (1976) gave four similar open-ended questions to all the teachers and twenty randomly selected sixth graders of an open-space middle school. He reported that many students and teachers found the noise disturbing. The teachers felt that they were more distracted than the students, but the students tended not to agree. A survey of 129 teachers and 200 students randomly selected from open-space schools in Michigan and California conducted by Cheek (1970) also found that the noise level in open-space was perceived to be a problem by its users.

At the end of the 1971-72 school year the School Board of Broward County, Florida (1972), conducted an evaluation of twelve of its open-space schools which had been in operation for a minimum of one year. A majority of the students and teachers in those schools felt that noise and confusion were problems. This result was compared to that received from a matched sample of teachers and students in schools of conventional design less than one half of whom felt that noise and confusion were problems.

Kyzar (1971) studied the problem of noise and visual distraction in four open-plan schools which had been paired with schools having a traditional design. The noise reduction value of each space was determined by taking three to five readings of tape recordings in various bands of white noise both in the source rooms and in the receiving rooms. The actual classroom sound levels were recorded on sound level meters. The noise reduction level of the open-space schools was found to be extremely low, but this did not constitute an uncontrollable problem according to the teachers. No significant difference between the sound levels in the two types of schools was found. Kyzar concluded:

One of the conceived problems in the analysis of open spaces for teaching is that of noise. This is a logical reaction when a mental comparison is made of the traditional classroom and its confining, protective walls. The evidence gained in this investigation, however, indicated that noise is not a problem in open-space schools. If the schools utilized are representative, teachers' concepts of noise can be relegated to the area of attitudes. Those teachers who complain of or are aware of noise are more than likely compensating for the absence of visual security.

An essential part of the administration of any elementary school is the supervision of instruction. Marran (1972) studied the visibility of work and the evaluation process with nurses in hospitals and teachers in open and closed schools and found that the visibility, soundness, and importance of evaluations were positively associated with each other. This was supported by the findings of a study involving 244 teachers in both open-space and conventional schools, in which the investigators found that higher visibility for a given evaluator made his evaluations not only sounder but also more important in the eyes of the recipient (Marran, et.al, 1972). They concluded:

The strong relationship to visibility we have observed in open and closed schools suggest that the open school may have an important impact on visibility and thereby on the professionalism of teachers and the quality of teaching.

Deibel (1971) investigated the factors in creating and utilizing open-space schools to determine how well they were meeting the demands placed upon them. He found staff development in the on-going program to be the highest positive factor in the successful operation of the open-space school.

In a study which attempted to identify supervisory problems in open-space schools in Edmonton, Alberta, Kleparchuk (1970) surveyed 17 principals and 104 teachers. He found that teachers in open-space schools had a strong desire for autonomy, considered the principal to be a facilitator and co-worker, and were vigorously opposed to being evaluated by the principal. Brunetti's (1970) investigation of the authority structure in the elementary school yielded similar results. The perceptions of 110 open-space teachers were compared with those of 120 teachers in self-contained classrooms. While the principal was perceived to exert the most influence over individual task performance in self-contained classroom schools, the teacher group was perceived to influence task performance most in the open-space schools. The results also suggested that a high degree of colleague interaction and cooperative task performance was brought about by reducing the physical and organization isolation of teachers in open-space. The influence of face-to-face interaction and task performance tended to reduce the personal authority of the principal in open-space.

From the results of a study whose purpose was to design an administrative model to facilitate and enhance teacher characteristics that appear to point toward success in the operation of an open-space school, Neilsen and Predovich (1970) concluded:

In administering an open-space school, the principal should bear in mind the nature of the school and of the individuals who work there. The open-space school means flexibility and a cooperative, shared enterprise. The administrative process should facilitate rather than inhibit this. The administrator's leadership style will be democratic. He will correspond to what Halpin called "thrust" and "consideration", or to what Black labeled 9, 9, which indicated a strong concern for people and for the task.

Research into the organization and administration of the open-space elementary school indicated that, in terms of the building itself, the auditory and visual distractions created by the absence or partial absence of interior partitions received the most attention. Whereas most of the research on this topic indicated that both students and staff were disturbed by the noise in open-space, the author of the most comprehensive and most

analytical study of the subject concluded that the actual noise was not the problem because there was little difference between open-space and self-contained schools in that respect. This was not to say, however, that the teachers were not disturbed. Instead, they were thought to be upset by the lack of visual security. Other research in the area of organization and administration indicated a high degree of colleague interaction and cooperative task performance was brought about by reducing the physical and organizational isolation of teachers in open-space, and that this in turn resulted in the reduction of the influence and authority of the principal of the open-space school.

As stated above, much of the research dealing with open-space schools was also concerned with team teaching, therefore, it was not surprising that of the three categories; organization and administration, teachers and teaching, and students and curriculum; the second was the subject of more study than the others.

Mackay (1972) conducted a study of the characteristics of teachers and administrators of open-space and traditional elementary schools in Santa Clara County, California, and found no significant difference between them. An investigation of by Jaworowicz (1972) into the effects of operating in open-space on the attitudes of teachers resulted in no significant changes between September and May.

In another study of the attitudes of teachers in open-space schools, Carbonari (1971) used Edwards Personal Preference Schedule to make attitudinal comparisons between open-space teachers and national teacher norms. A composite teacher from the subject schools was profiled by averaging the sub-test scores using the conversion tables provided in the test manual. When compared with the normative group for the test, no extreme results were found. Carbonari stated, "The teachers were found to be well-adjusted and competent without any characteristics greatly distinguishing them from other teachers in the larger population."

In still another study of teacher attitude and personality in open-space schools, Wren (1972) discovered definite measurable differences. She questioned her findings, however, in the following statement:

The question comes to mind: Do these personality traits have to be already internalized for adjustment in an open area teaching situation or does the teaching environment affect and modify the original personalities bringing about adjustment?

Insofar as personality and attitude were concerned, the research indicated that teachers in open-space schools were not significantly different from other teachers nor were their attitudes and personalities changed significantly as a result of their experience in open-space. But what of their attitudes about teaching and their effectiveness in the classroom?

Mills (1972) studied attitude and teaching effectiveness with sixty teachers randomly selected from a volunteer population of 128 primary teachers performing in open-space and self-contained classrooms in the Washington Elementary School District, Phoenix, Arizona, during the 1971-72 school year. The Instrument for the Observation of Teaching Activities was used as the criterion instrument for measuring teaching performance and the Minnesota Teacher Attitude Inventory was used as the correlate instrument for measuring

teacher attitude. Mills found that 1) cooperation and space variability appeared to contribute to a higher level of classroom performance, 2) teachers performing cooperatively in open-space appeared to participate at a higher level of competence in professional activities outside the classroom, 3) teachers performing cooperatively in open-space exhibited attitudes which are more permissive, accepting, supportive, warmer, and sympathetic toward students, and 4) teachers performing cooperatively in open-space exhibited attitudes toward greater pupil freedom and self-direction which extends from teacher involvement and help rather than teacher apathy and indifference.

Whereas Mills found teachers operating in open-space to be more permissive, accepting, sympathetic, and given to attitudes toward greater pupil freedom and self-direction and that these attitudes were reflected in a higher level of classroom performance, other studies indicated that such differences did not exist between open-space teachers and those functioning in self-contained classroom environments.

As a preliminary phase of a study of team teaching and classroom environment, Lueders-Salmon (1972) administered an instrument designed to determine an individual's beliefs about the formal control of children to teachers and principals in open-space and traditional schools. The results revealed no significant differences in the control orientations of teachers and/or principals in the two types of schools.

Read (1972) approached the topic of teachers' classroom practices from the viewpoint of the student and found that there were no significant differences in the practices of teachers in self-contained and open-space classrooms as perceived by sixth grade students operating in those environments.

Townsend (1971) observed teachers in second and sixth grades in open-space, departmentalized, and self-contained classrooms using Flanders interaction analysis and found little difference in teaching style in the three environments.

Kyzar (1971) was unable to determine any significant differences in the activities utilized in the instructional programs of four matched pairs of open-space and traditional schools.

From a study in which two trained observers recorded teacher activity in grades four through six of open-space and traditional schools, Ellison and Ratsoy (1969) reported that differences between the schools did not appear greatly to affect practices within them.

Two studies conducted by the York County Board of Education (1971) of Ontario, Canada, revealed that teachers in open-space schools regroup students more frequently. There were no significant differences in the other teacher practices studied.

An attempt to measure another aspect of teacher attitude was made by Meyer (1970) in a study of the work relationships and activities of teachers and their overall influence in open-space and traditional plan schools. Questionnaires covering ambition and orientation, formal evaluation, job satisfaction, school authority structure, and personal background information were administered to 110 teachers from nine open-space elementary schools and 120 teachers from eight traditional plan elementary schools. Results indicated that teachers in open-space schools were more satisfied, felt more autonomous and reported more influence in making all kinds of decisions.

A study dealing with a similar dimension of teacher attitudes which was conducted by the School Board of Broward County, Florida, (1972) used the Organizational Climate Description Questionnaire developed by Halpin and Croft. The instrument was designed to provide a description of interpersonal relationships between faculty members in elementary schools and interpreted as being primarily a measure of teacher morale. Results of the investigation showed that a more positive organizational climate existed in the traditional schools, i.e., the morale of teachers in open-space was not as high as that of teachers in conventional buildings.

The literature dealing with teachers and teaching in open-space schools was replete with conflicting evidence to the extent that few if any conclusions could be drawn from it. It may be safe to assume that teachers in open-space schools were not significantly different as individuals from teachers in other types of school facilities, however, the weight of evidence supporting this was not overwhelming. From the work of Mills (1972) one could conclude that teachers in open-space schools were more involved in professional activities outside the classroom, were more effective in the classroom, and dealt with students on a friendlier, more personal level. The first of these conclusions was supported by additional research. However, the researchers were unable to find any support for the other conclusions in the literature, therefore, it would appear safe to assume that teachers in open-space schools were not significantly different from their counterparts in schools of conventional design.

In the literature on open-space schools one was able to find some research dealing with the topic of students in open-space. Apparently little, if any, study was made of the curriculum in open-space schools, however. The subject was examined in the general sense of the program of open-space schools, but this was done in studies which dealt primarily with topics other than curriculum.

Traub, Weiss, Fisher and Musella (1972) conducted a study for the purpose of which was to develop a teacher questionnaire for assessing the extent to which a school's program embodied the characteristics of open education. In discussing these characteristics, they stated:

Most readily inferred is that open education should provide children with opportunities of several types: to explore their school environment; to make decisions about their own learning; to work at their own pace, following their own style; to learn from concrete experiences before making abstract generalizations; to make errors, presumably without fear of censure, and to be helped to learn from them.

In the second phase of their study, data was collected from 449 teachers in thirty schools in a large Ontario city. The schools were varied as to their architectural type: eighteen traditional, six open, and six schools where an existing traditional building contained an open-space extension. One of the results of their research indicated a small but statistically significant difference in the type of program found in schools of different architecture with the programs in open-space being more open than those in traditional buildings.

In a study of team teaching and the active classroom; i.e., one in which the child is given choices, opportunities to work independently, and encouragement to behave actively; Lueders-Salmon (1972) related measures of child activity to the type of school architecture and

found that classrooms in open-space schools were more active; twice as active in fact, as those in self-contained classroom buildings. Because she was unable to find any significant difference in the classroom control orientations of the teachers, Lueders-Salmon attributed the results to team teaching and to curriculum differences in the open-space schools.

Several studies investigated the effects of open-space on students. Oldridge and Overlander (1972) studied student adjustment to open space and found that the majority of the students in their study indicated that they had few if any problems adjusting to the new environment and preferred it to their previous self-contained classroom school environment. From a study in a similar vein, McCallum (1971) concluded that the type of school attended by children seemed to bear no relationship to the kinds of problems they had, nor to the depth of the problem experience.

The effects of open-space on the attitudes and personalities of students was the subject of considerable research. Wren (1972) used a pretest, posttest technique to study this problem and found measurable differences in the students at the end of the study. She said:

As students in experimental and control groups in grades three and four were assigned to a common environment (either open-space or self-contained classroom), the two groups tended to become more alike in measured characteristics. However, the fifth grade groups, separated into open-area and traditional classrooms, tended to develop more differences between the groups during the year.

In a study of attitudes and personality factors of children who had been in an open-space school for more than one year, Carbonari (1971) found some statistically significant differences in the results of the IPAT Children's Personality Questionnaire which was administered to all the participants in the study. The children from the open-space environment were found to be more independent, lively, self-reliant, extroverted, and anxious than those from self-contained classrooms. As to the findings of increased anxiety levels in students from open-space schools, Carbonari speculated, "That they are more anxious can perhaps be explained by postulating a link between anxiety and responsibility; i.e., increased burden of individual responsibility induces a higher level of anxiety.

To answer the question, "Are pupils in open plan schools different?", Wilson, Langevin, and Stucky (1969) compared students in open-space and traditional schools and found that students in open-space schools rated themselves and their schools more positively than those in the traditional buildings. They also found that pupils in open environments demonstrated an obvious self-discipline, maturity, and absorption in their activities.

Two studies conducted by the Board of Education of York County, Ontario (1971), yielded similar results. Students in open-space schools were found to have greater self-discipline and maturity, exhibited more absorption in activities, held a higher regard for their schools and themselves, and displayed a greater degree of social adjustment. The Halton County Board of Education of Oakville, Ontario (1969) also found that students in open-space schools had better attitudes towards schools and themselves.

The findings discussed above were supported by research done by Myers (1971) in the Prince George School District in Central British Columbia. Using Torrance and Myers' Ideal Teacher Checklist, he tested the following hypotheses:

1. Pupils in open-space will be less concerned about discipline or control than pupils in self-contained classrooms.
2. Pupils in open-space will be more autonomous than pupils will be in self-contained classrooms.
3. Pupils in open-space will be less concerned about fair treatment than pupils will be in self-contained classrooms.

All three hypotheses were corroborated by the results of the analysis of the data.

As has been shown above, studies of the effects of open-space on student attitudes and personality factors consistently yielded results favoring the student in an open-space environment. An exception to these conclusions was found in a study by Sackett (1971). In an investigation of the academic achievement and the self-concept of sixth graders in an open-space school, a self-contained school, and a departmentalized school he found that those in the open-space school scored significantly lower on a measure of self-concept than the students in both self-contained and departmentalized schools.

Another facet of open-space which received considerable attention from researchers was the effect an open-space environment had on the academic achievement of students. These investigations did not yield the consistent results found in the studies of student attitudes and personality factors, however.

Townsend (1971) compared the achievement test results of second and sixth graders in three schools representative of open-space, departmentalized, and self-contained organizations. The results indicated that the achievement of pupils in both departmentalized and self-contained classrooms was superior to that of students in open-space schools. These findings were replicated by Sackett's study discussed above (Sackett, 1971).

The Broward County School Board of Fort Lauderdale, Florida (1972), compared the achievement test results of third, fifth, and eighth grade students in open-space and conventional schools for the 1970-1971 school year. After taking differences in ability into consideration, the over-all results on all tests favored conventional schools for all sex/race groups except for third and eighth grade black boys. The author of the report refused to draw any conclusions from these results, however, because of the possibility that the results were caused by such intervening variables as lack of experience in the program and overcrowding in innovative schools.

The remaining studies reviewed for this report indicated that open-space had no discernible effect on student achievement. From a comparison of the achievement of sixth graders in open-space and self-contained schools, Read (1973) was unable to find any statistically significant differences in the academic achievement of the two groups. Johnson's (1970) study of the results of the Iowa Test of Basic Skills of third graders in open-space and self-contained schools in Howard County, Maryland, also found that differences between schools could be attributed to chance. Warner (1971) studied students in a building which had a section of self-contained classrooms and another section which was of open-space design. No significant difference in the performance of the two groups was found. A comparison of reading and

mathematics scores of first graders in open-space and conventional schools in York County, Ontario (1971), also resulted in the researchers finding no significant differences.

Kennedy and Say (1971) of the Bureau of Educational Research and Services of the University of Houston conducted a research study during the 1969-70 school year involving students and staff members of an open-area elementary school and a comparable closed-area or traditional elementary school in the same district. The purpose of the study was to determine the effectiveness of the open-area school by comparing the success of the students attending that type of school with the success of those attending a closed-area school possessing comparable socioeconomic backgrounds. Pretests were administered to randomly selected student samples in the fall and posttests were given the following May. A t-test analysis of all the pretest data indicated that the samples were statistically comparable at the second, third, and fourth grade levels. After the posttest scores were subjected to statistical analysis, Kennedy and Say reported:

Thus, as a result of this analysis, no definite conclusions can be made concerning the superiority of either educational environment in producing cognitive gain over a one-year span of time. This result is consistent with other similar short-range studies which have contrasted cognitive gain and does not preclude the possibility of significant differences in cognitive gain emerging over a longer time span.

A review of the research related to open-space schools was organized according to three categories; 1) organization and administration, 2) teachers and teaching, and 3) students and curriculum.

Students of topics included in the first category, organization and administration, revealed that the absence of interior partitions was perceived to create disturbances by both students and teachers although whether these problems were the result of noise or the lack of visual security was not clear. Other studies in this category indicated that open-space design contributed to the increases in colleague interaction and cooperative task performance. From additional research concerning the organization and administration of open-space schools it was found that the principal in open-space was perceived by staff to be less influential and to have less authority than his counterpart in schools of more conventional design.

In the area of teachers and teaching, the research indicated that as individuals teachers in open-space were apparently no different from those who taught in more traditional environments, that there was no significant difference in their attitudes toward students and teaching, and that there were no apparent differences in the teaching practices of the two groups. Due to the conflicting evidence yielded by studies in this area, the only conclusion which was supported rather than contradicted by other studies was that open-space teachers tended to be more active in professional activities outside the classroom than teachers in conventional schools.

The third category into which the related research was divided for study was students and curriculum. Although there was little research to draw from on the topic of the curriculum and open-space, the results revealed that the programs in open-space schools gave students more choices, more opportunities to make decisions about their own learning, more chances to work independently and more occasions to work at their own pace. In the research on student

attitudes and personalities, students in open-space environments were judged to be more absorbed in their schools tasks, more self-disciplined, and more mature. In terms of academic achievement, however, most studies indicated that there was no significant difference between the achievement of students in open-space schools and those in more conventional schools.

CHAPTER THREE

METHODS AND PROCEDURES

The purpose of this study was to gather data from teachers and principals of open-space elementary schools in an attempt to determine what educators working in open-space schools perceive the purposes of these schools to be.

Population

The population used in this study included the teachers and principals of selected open-space elementary schools in Iowa in 1974-75. The open-space schools were identified in a survey of innovative practices in the elementary schools of Iowa conducted by Sloan and Loomer (1972).

A letter explaining the purpose of the investigation and requesting permission to include them and their teachers in the study was sent to the principals of the selected schools on August 26, 1974. A stamped self-addressed postcard was enclosed. The information requested on the postcard included the name of the principal and his/her school, the school address, and the number of teachers in the building.

A follow-up letter was mailed on September 17, 1974. This letter also included the stamped self-addressed envelope discussed above.

Fifty of the sixty-five open-space schools agreed to participate in the study. Forty seven completed all the research forms.

Construction of the Instrument

The questionnaire used to gather the data for this investigation was composed of statements relating to the purposes of open-space schools. These statements were developed from information obtained from a review of the professional literature on open-space. Sources included books, articles from professional periodicals, monographs, reports, and transcripts of speeches. A total of thirty-five statements relating to the purposes of open-space schools were prepared. They were grouped according to the following categories: organization and administration, teachers and teaching, and students and curriculum.

A panel composed of two professors of education, two doctoral candidates in education, and two principals of open-space elementary schools evaluated the statements using the following:

1. Is the statement clearly stated?
2. Is the statement related to a purpose of an elementary school?
3. Is the statement categorized properly?

As a result of this evaluation, thirty-one statements were judged to be acceptable to all members of the panel. Seven statements were related to the organization and administration of the school, fourteen statements were concerned with teachers and teaching, and ten statements were related to students and curriculum.

Based upon the review of the literature and the recommendations of the panel, the final questionnaire was compiled and printed. The first section of the instrument contained a brief introductory statement giving the purpose of the study and requesting the assistance and cooperation of the recipient. The second section was composed of nine items of demographic data. The third and last section of the instrument contained the thirty-one statements relating to the purposes of open-space schools. The items were not identified by category and were organized in a random order. The statements in the third section of the questionnaire are identified by category in the following table.

Each statement was followed by a five point Likert-type scale. Participants were instructed to respond along the scale--strongly agree, agree, no opinion, disagree, strongly disagree.

TABLE 3
QUESTIONNAIRE STATEMENTS BY CATEGORY

Category	Statement Numbers
Organization and Administration	4, 9, 19, 26, 27, 28, 31
Teachers and Teaching	1, 2, 6, 7, 8, 10, 12, 13, 15, 16, 17, 23, 24, 30
Students and Curriculum	3, 5, 11, 14, 18, 20, 21, 22, 25, 29

This investigation was based on the null hypothesis which was stated as follows: There will be no significant differences in the reactions of the professional staff members of open-space elementary schools to statements relating to purpose which include the term "open-space" and their reactions to these statements when the term "open-space" has been deleted. To test this hypothesis two forms of the questionnaire were prepared. The first and second sections of the instrument were identical. In the third section of Form I of the questionnaire all the statements contained the term "open-space" whereas none of the statements in Form II contained the term "open-space". Copies of both forms may be found in the appendix.

Mailing and Return of Instrument

Prior to the mailing of the questionnaires, treatment groups were established. The principals and teachers of half of the fifty open-space schools which had agreed to participate in the study were assigned Form I of the questionnaire. These people were identified as Group I. The principals and teachers of the remaining open-space schools were assigned Form II of the questionnaire and were identified as Group 2.

During the middle of October, 1974, the principals of the schools who had agreed to participate in the study were mailed a packet of questionnaires for distribution to their teachers. The packet also included a self-addressed stamped envelope for returning the questionnaires. Each of these envelopes was given a number which was used to identify the individual schools

in recording returns. A follow-up postcard was sent to some of the principals on November 16, 1974.

Packets of questionnaires were mailed to a total of fifty schools. A total of forty-seven open-space schools (94 per cent) responded.

In terms of treatment groups, 248 teachers and 22 principals in Group 1 returned questionnaires, and 187 teachers and 14 principals responded from Group 2.

Treatment of the Data

The data from 435 teachers and 36 principals were treated as follows. The responses on each questionnaire were keypunched onto individual IBM cards. These cards were divided according to the two treatment groups discussed above. Within the treatment groups, the cards for principals were separated from those of teachers. A program was devised to compute and report average teacher scores for every school in the study. Another function of the program computed and reported the difference between the average teacher's score in each building and that of the principal of the building with the principal's score being subtracted from the average teacher's. Cards were keypunched with these new scores and an analysis of variance of the two treatment groups was made for teachers, principals, and the differences between the two.

This study was based on one null hypothesis. This hypothesis stated that teachers and principals of open-space schools would respond in the same manner to statements regardless of whether or not the statements contained the term "open-space". This hypothesis was stated as $H_0: \mu_W = \mu_{WO}$ in which W represented the term "with" and WO represented the term "without". To test this hypothesis an analysis was made of the data obtained from Groups 1 and 2.

The purpose of the analysis of the data was to determine whether or not there were significant differences between selected pairs of means. It was determined that the most efficient method for accomplishing this was a simple one way analysis of variance using Fisher's Least Significant Difference Procedure. This procedure consists of making all possible pair-wise comparison's between treatment groups by using a t-test. The total procedure has the advantage of making use of all the available data and is suited to this particular study because of the small number of treatment groups involved. The level of significance was specified as .05. The ANOVA and the t-values were obtained through the use of a program devised by Dr. Bill Snider and Dr. James Maxey of the Lindquist Center for Measurement at the University of Iowa.

CHAPTER FOUR

ANALYSIS OF THE DATA

The questionnaire was designed to yield demographic data about the respondents as well as data relating to the null hypothesis upon which the study was based. The demographic data collected from teachers included (1) age, (2) total years as an elementary school teacher, (3) total years as a teacher in the school district in which they were working at the time of the study, (4) total years of experience in open-space, (5) the grade level of the children with whom they were working at the time of the study, (6) the size of the school in terms of the number of teachers on the staff, and (7) the teacher's reason for being in his/her position. The same instrument was used to solicit information from principals, but only age, years of experience as an elementary school teachers, size of school, and reason for being in his/her present position were considered applicable. The data were arranged in the order described above for analysis and presentation in this chapter.

The data yielded by the second section of the questionnaire were arranged for analysis and presentation in two ways. The data were first analyzed by treatment groups. The analysis of the data for each statement was arranged by treatment groups. The analysis of the data for each statement was arranged by treatment group and presented separately for teachers, principals, and for the differences between the scores of the two (teacher average score minus the score of the building principal). Separate presentations of the analysis of the data yielded by each statement were also presented for the null hypothesis which formed the basis of this study.

Explanation of Tables

The tables presenting demographic data were arranged as follows. The top row of the table indicates the categories of each request of this section of the questionnaire. The first column of each table lists the two treatment groups along with the number of responses for that particular request. The percentages were based on the number of responses. (Tables 4-14).

Tables 15, 16, and 17 present summaries of the data yielded by Fisher's lsd procedure and were arranged as follows. The first column contains the number of the statement which yielded the original data, the second column contains the mean and standard deviation of the responses of Group 1 to that statement, column three the same information for Group 2, column four contains the t-score for the comparison of the means from Groups 1 and 2 ($\bar{X}_1 - \bar{X}_2$).

The t_{12} comparison presented in Summary Tables 15, 16, and 17 is the test for $H_0: \mu_W = \mu_{WO}$. This comparison is also presented for each statement on the questionnaire in Tables 18 through 48. Each of the tables presents the results of the analysis of the data yielded by both the Form I version of the statement (with the term "open-space") as well as that yielded by the Form II version (without the term "open-space"). Each table also presents the analysis of this data for teachers, principals, and the differences between the two. The first three columns of each of these tables give the number, the mean, and the standard deviation of the reactions yielded by each of the two forms of the statement. The fourth and fifth columns present the degrees of freedom and the t-score of the comparison of the two.

Analysis of the Data

Demographic Data

Included under the general heading of demographic data are seven items about teachers and four items about principals. Since none of this information was directly involved in testing the basic hypothesis of the study, it was analyzed by simply finding the per cent each category was of the whole number of responses.

As shown in Table 4, the ages of the teachers in open-space schools were very similar. Teachers in the age group from twenty to twenty-nine formed the largest single category and over two-thirds of them were under forty.

The information in Table 7 was related primarily to a comparison of the two groups of open-space teachers since it concerned experience as a teacher in open-space. There appeared to be little difference between the groups in that respect.

The analysis of the data reported in Table 8 revealed that the respondents from the open-space schools tended to be evenly distributed among the three levels (primary, intermediate, and upper).

There was little difference between the two groups of schools in terms of the teachers' reasons for being in their present positions (Table 10).

Testing $H_0 : \mu_W = \mu_{WO}$

To test the null hypothesis $\mu_W = \mu_{WO}$ a comparison was made of the data obtained from Group 1, open-space teachers and principals who reacted to statements containing the term "open-space", and the data obtained from Group 2, open-space teachers and principals who reacted to statements which contained no mention of the term "open-space".

An inspection of the summary of the analysis of the teacher average scores (Table 15) indicated that those in Groups 1 and 2 reacted positively to all but three statements. These were statement #8 which stated that student grouping should be determined on the basis of teacher judgment only, statement #14 which denied the need for a fixed curriculum, and statement #26 which said there should be no fixed daily schedule of events. The two groups were consistent in their reactions in that both reacted positively to the same statements.

TABLE 4
AGE OF TEACHERS

	20-29 Years	30-39 Years	40-49 Years	50-59 Years	60-69 Years
Group 1 N = 247	49.4%*	21.1%	17.4%	8.9%	3.2%
Group 2 N = 187	42.8%	23.5%	17.1%	11.8%	4.8%

*Shown as per cent of group.

TABLE 5
TOTAL YEARS AS ELEMENTARY TEACHER

	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 or More Years
Group 1 N = 247	35.6%*	30.0%	11.3%	9.7%	8.1%	3.2%	1.2%	0.4%	0.4%
Group 2 N = 187	28.3%	29.9%	15.5%	15.0%	6.4%	1.6%	2.7%	0.5%	-

*Shown as per cent of group.

TABLE 6
TOTAL YEARS AS TEACHER IN THE DISTRICT

	0-2 Years	3-4 Years	5-6 Years	7-8 Years	9-10 Years	11-12 Years	13-14 Years	15-16 Years	17 or More Years
Group 1 N = 248	23.4%*	21.4%	20.2%	11.7%	5.6%	4.4%	4.4%	4.0%	4.8%
Group 2 N = 186	26.7%	13.4%	14.5%	13.4%	9.7%	7.5%	4.8%	4.8%	4.8%

*Shown as per cent of group.

TABLE 7
YEARS AS A TEACHER IN OPEN-SPACE

	None	1-2 Years	3-4 Years	5-6 Years	7 or More Years
Group 1 N = 244	5.0%*	36.5%	40.6%	15.2%	2.9%
Group 2 N = 185	8.1%	40.0%	30.8%	16.8%	4.3%

*Shown as per cent of group.

TABLE 8
PER CENT OF TEACHERS AT DIFFERENT GRADE LEVELS

	Primary (K-2)	Intermediate (3-4)	Upper (5-6)
Group 1 N = 231	36.8%	37.7%	25.5%
Group 2 N = 176	29.5%	36.4%	34.1%

TABLE 9
TEACHER MEMBERSHIP IN DIFFERENT SIZE SCHOOL STAFFS

	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25 or More
Group 1 N = 245	0.8%*	1.3%	1.6%	4.9%	10.6%	23.3%	12.7%	20.4%	24.5%
Group 2 N = 186	0.0%	1.6%	1.6%	7.5%	11.8%	15.1%	16.1%	12.9%	33.3%

*Reported as per cent of group.

TABLE 10

TEACHERS' REASONS FOR BEING IN PRESENT POSITION

	Requested This Placement	Assigned To This Position	This School Replaced The One I Previously Taught In
Group 1 N = 247	51.0%*	32.0%	17.0%
Group 2 N = 186	51.1%	38.2%	10.8%

*Reported by per cent of group.

TABLE 11

AGE OF PRINCIPALS

	20-29 Years	30-39 Years	40-49 Years	50-59 Years	60-69 Years
Group 1 N = 22	4.5%*	27.2%	45.5%	13.6%	9.1%
Group 2 N = 14	7.1%	35.7%	42.9%	7.1%	7.1%

*Shown as per cent of group.

TABLE 12

PRINCIPALS' TOTAL YEARS AS ELEMENTARY TEACHER

	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 or More Years
Group 1 N = 22	13.6%*	40.9%	9.1%	18.2%	9.1%	4.5%	4.5%	0	0
Group 2 N = 14	28.6%	14.3%	42.9%	7.1%	7.1%	0	0	0	0

*Shown as per cent of group.

TABLE 13
 SIZE OF TEACHING STAFF WITH WHOM PRINCIPAL WORKS

	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25 or More
Group 1 N = 21	0	0	0	9.5%*	9.5%	23.8%	9.5%	28.6%	19.1%
Group 2 N = 14	0	7.1%	0	14.3%	7.1%	35.7%	7.1%	7.1%	21.4%

*Reported as per cent of group.

TABLE 14
 PRINCIPALS' REASONS FOR BEING IN PRESENT POSITION

	Requested This Placement	Assigned To This Position	This School Replaced The One I Was Previously Principal Of
Group 1 N = 22	54.5%*	36.4%	9.1%
Group 2 N = 11	45.5%	54.5%	0

*Reported as per cent of group.

An analysis of the data obtained from the teachers in Group 1 and 2 revealed a significant difference at the .05 level in their reactions to four of the thirty-one statements. There was no apparent pattern in the reactions to these four statements. In two cases teachers in Group 1 were more positive than their counterparts in Group 2, and the reverse was true in the other two cases. This same absence of concentration on any particular factor was also true of the categories of the four statements. (Table 3) Two of the statements (#3 and #25) pertained to students and curriculum, one statement (#6) pertained to teachers and teaching, and one statement (#19) pertained to organization and administration.

The summary of the reactions of principals in Groups 1 and 2 revealed overall results similar to those of the teachers. (Table 16) Principals also reacted negatively to statements #8, #14, and #26 and positively to the remaining twenty-eight. The Group 1 and Group 2 reactions were consistent for principals just as they were for teachers.

The analysis of the comparisons of Group 1 and Group 2 principals' reactions yielded only one significant difference at the .05 level.

There were no significant differences in the difference between the reactions of teachers in Group 1 and 2 and those of principals in the same groups. (Table 17)

A discussion of the results of analysis of data yielded by some of the statement variables used to test $H_0: \mu_W = \mu_{W0}$ follows.

The two forms of statement # 3 which claimed that the way a student acquires and uses knowledge is more important than the knowledge itself was the first to produce a significant difference. Teachers and principals both reacted positively to the statement, but the version without the term "open-space" produced a more positive reaction in both groups. For teachers this reaction was significantly different at the .05 level.

In reacting to statement #5 concerning organization of space in a school, the teachers responding to the form which used the term "open-space" reacted more positively than those who were given Form II. The difference was not significant, however, it is interesting to note that the mean reactions of the principals' groups to this statement were nearly identical.

Those teachers who were lead to think specifically about the open-space school by Form I of the questionnaire reacted more positively to statement #6 which claimed that schools should promote informal relationships between students and teachers than those who reacted to Form II. The difference between the two was significant at the .05 level. There was very little difference between the reactions of the two groups of principals which tended to be more positive than the reactions of the teachers. (Table 23)

Statement #7 which dealt with continuous progress through materials did not yield any significant differences. However, there was a greater difference in the reactions of the teacher groups than there was in those of the principal groups. Those who reacted to Form I of the questionnaire were more positive than were the others. (Table 24)

Statement #19 yielded significant differences at the .05 level between teachers in Group 1 and 2 as well as between the principals in the two groups. Whereas the mean responses of all the groups indicated that they favored teachers being involved in some form of team teaching, both the teachers and the principals who reacted to Form II of the instrument were significantly less positive. (Table 36)

Statement #21 said that informal talking between students should be encouraged as an aid to learning. The teachers and principals in both groups reacted positively to both forms of the statement. (Table 38).

Teachers who responded to Form I of statement #25 which claimed that other factors were equally as important as academic achievement reacted less positively than the teachers who responded to Form II. This difference was significant at the .05 level. There was little difference between the reaction of the principals' groups, however, the tendency was for those responding to Form I to be less positive. (Table 42)

Both teachers and principals reacted positively to statement #31 which stated that teachers should be willing to accept frequent and continuing change. Principals tended to be more positive than teachers, but the difference was not significant at the .05 level. (Table 48)

TABLE 15

SUMMARY OF ANALYSIS OF TEACHER AVERAGE SCORES

Statement Number	Group 1 N=24*		Group 2 N=23**		t_{12}^a
	\bar{X}	S.D.	\bar{X}	S.D.	
1	1.50	0.26	1.57	0.33	-0.715
2	2.15	0.44	2.25	0.50	-0.750
3	2.07	0.39	1.82	0.35	2.382 ^b
4	2.33	0.44	2.29	0.41	0.319
5	1.83	0.19	2.01	0.48	-1.899
6	2.03	0.36	2.33	0.53	-2.183 ^b
7	1.74	0.52	1.97	0.41	-1.719
8	3.75	0.33	3.54	0.44	1.560
9	1.84	0.31	1.70	0.25	1.735
10	2.53	0.31	2.49	0.62	0.364
11	2.43	0.44	2.64	0.64	-1.440
12	1.84	0.29	1.88	0.28	-0.543
13	1.74	0.27	1.77	0.42	-0.300
14	4.15	0.31	4.13	0.26	0.341
15	2.37	0.37	2.21	0.53	1.246
16	1.61	0.31	1.68	0.30	-0.768
17	2.25	0.40	2.13	0.45	0.975
18	2.43	0.39	2.56	0.56	-0.986
19	1.69	0.32	2.18	0.59	-3.781 ^b
20	1.83	0.19	1.93	0.45	-1.146
21	2.23	0.42	2.22	0.47	0.091
22	1.73	0.19	1.76	0.42	-0.302
23	2.18	0.29	2.14	0.46	0.413
24	2.60	0.51	2.69	0.74	-0.501
25	1.65	0.30	1.48	0.29	2.204 ^b
26	3.95	0.32	3.87	0.44	0.641
27	2.67	0.47	2.85	0.66	-1.272
28	1.90	0.23	1.81	0.41	0.912
29	1.78	0.27	1.73	0.33	0.528
30	1.83	0.22	1.75	0.39	0.835
31	1.80	0.28	1.87	0.40	-0.806

df=72

^a t_{12} represents the t-score for $\bar{X}_1 - \bar{X}_2$

^bDenotes a significant difference at the .05 level.

Group 1 - Open-space teachers reacting to statements with term "open-space".

Group 2 - Open-space teachers reacting to statements without term "open-space".

*This represents 24 open-space schools with a total of 248 teachers.

**This represents 23 open space schools with a total of 187 teachers.

TABLE 16
SUMMARY OF ANALYSIS OF PRINCIPALS' SCORES

Statement Number	Group 1 N=22		Group 2 N=14		t_{12}^a
	\bar{X}	S.D.	\bar{X}	S.D.	
1	1.50	0.72	1.29	0.45	0.922
2	1.91	0.95	1.93	1.03	-0.057
3	1.73	0.86	1.64	0.81	0.325
4	1.91	0.60	2.29	0.96	-1.279
5	1.86	0.81	1.86	0.99	0.022
6	1.82	0.57	1.86	0.99	-0.123
7	1.64	0.71	1.71	0.59	-0.339
8	3.77	1.04	4.00	0.76	-0.718
9	1.90	0.60	1.71	0.45	1.038
10	2.18	0.78	2.50	0.82	-1.052
11	2.36	1.15	2.57	1.18	-0.552
12	1.55	0.50	1.71	0.45	-1.111
13	1.59	0.78	1.36	0.48	1.015
14	4.45	0.50	4.36	0.48	0.569
15	2.18	0.83	2.36	0.81	-0.568
16	1.45	0.58	1.50	0.50	-0.179
17	2.18	1.07	1.93	0.80	0.733
18	2.09	1.12	2.00	1.00	0.240
19	1.36	0.48	1.93	0.70	-2.448 ^b
20	1.55	0.58	2.00	1.13	-1.671
21	2.00	0.90	2.07	0.80	-0.231
22	1.50	0.50	1.43	0.49	0.418
23	1.91	1.00	2.21	0.86	-1.038
24	2.50	1.34	2.71	1.22	-0.516
25	1.59	0.72	1.50	0.82	0.376
26	3.86	0.97	3.86	0.64	0.024
27	2.50	1.20	2.29	0.96	0.599
28	1.77	0.52	1.79	0.41	-0.061
29	1.45	0.50	1.43	0.49	0.117
30	1.73	0.54	1.57	0.49	0.885
31	1.64	0.71	1.57	0.49	0.317

df=57

^a t_{12} represents the t-score for $\bar{X}_1 - \bar{X}_2$

^bDenotes a significant difference at the .05 level.

Group 1 - Open-space principals reacting to statements with term "open-space".

Group 2 - Open-space principals reacting to statements without term "open-space".

TABLE 17

SUMMARY OF ANALYSIS OF DIFFERENCES BETWEEN TEACHER
AVERAGES AND PRINCIPALS' SCORES (T-P)

Statement Number	Group 1 N=22		Group 2 N=14		t_{12}^a
	\bar{X}	S.D.	\bar{X}	S.D.	
1	0.01	0.74	0.21	0.54	-0.775
2	0.25	0.95	0.44	1.07	-0.510
3	0.38	0.81	0.06	0.89	1.224
4	0.42	0.68	-0.06	0.97	1.628
5	0.00	0.80	0.08	1.10	-0.240
6	0.25	0.63	0.46	1.19	-0.587
7	0.13	0.77	0.29	0.69	-0.666
8	-0.04	0.96	-0.53	0.89	1.389
9	-0.07	0.57	0.00	0.36	-0.385
10	0.37	0.72	0.06	0.85	1.451
11	0.10	1.13	-0.03	0.98	0.349
12	0.34	0.52	0.17	0.47	0.996
13	0.18	0.77	0.31	0.55	-0.525
14	-0.30	0.41	-0.23	0.62	-0.385
15	0.21	0.81	-0.16	0.80	1.248
16	0.17	0.61	0.16	0.51	0.043
17	0.07	1.19	0.16	0.86	-0.240
18	0.36	1.06	0.51	1.01	-0.416
19	0.35	0.46	0.11	0.68	0.877
20	0.29	0.55	-0.05	1.39	1.113
21	0.27	0.71	0.22	0.89	0.173
22	0.25	0.50	0.40	0.56	-0.737
23	0.28	1.02	0.01	0.86	0.888
24	0.12	1.19	-0.04	0.97	0.437
25	0.10	0.61	-0.06	0.87	0.649
26	0.10	1.01	0.11	0.89	-0.023
27	0.19	0.87	0.56	0.90	-1.207
28	0.12	0.51	-0.04	0.52	0.763
29	0.34	0.51	0.34	0.60	-0.028
30	0.11	0.38	0.11	0.65	0.010
31	0.19	0.62	0.22	0.64	-0.169

df=57

^a t_{12} represents the t-score for $\bar{X}_1 - \bar{X}_2$.

Group 1 - Open-space respondents reacting to Form I.

Group 2 - Open-space respondents reacting to Form II.

TABLE 18

COMPARISONS OF DATA FROM STATEMENT #1

FOR $H_0: \mu_W = \mu_{WO}$

Statement # 1

Form I The open-space school should provide students with many alternative ways to accomplish a learning task.

Form II Students should be provided with many alternative ways to accomplish a learning task.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.50	0.26	72	-0.715
Teachers' Averages - Form II	23	1.57	0.33		
Principals' Averages - Form I	22	1.50	0.72	57	0.922
Principals' Averages - Form II	14	1.29	0.45		
Differences (T-P) - Form I	22	0.01	0.74	57	-0.775
Differences (T-P) - Form II	14	0.21	0.54		

TABLE 19

COMPARISONS OF DATA FOR STATEMENT #2

FOR $H_0: \mu_W = \mu_{WO}$

Statement # 2

Form I The teacher in an open-space school should encourage students to evaluate their own progress and to continue through materials without always checking with the teacher.

Form II The teacher should encourage students to evaluate their own progress and to continue through materials without always checking with the teacher.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	2.15	0.44	72	-0.750
Teachers' Averages - Form II	23	2.25	0.50		
Principals' Averages - Form I	22	1.91	0.95	57	-0.057
Principals' Averages - Form II	14	1.93	1.03		
Differences (T-P) - Form I	22	0.25	0.95	57	-0.510
Differences (T-P) - Form II	14	0.44	1.07		

TABLE 20

COMPARISONS OF DATA FROM STATEMENT #3
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #3

- Form I The philosophy of the open-space school should include the belief that the way a student acquires and uses knowledge is more important than the knowledge itself.
- Form II The way a student acquires and uses knowledge is more important than the knowledge itself.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	2.07	0.39	72	2.382*
Teachers' Averages - Form II	23	1.82	0.35		
Principals' Averages - Form I	22	1.73	0.86	57	0.325
Principals' Averages - Form II	14	1.64	0.81		
Differences (T-P) - Form I	22	0.38	0.81	57	1.224
Differences (T-P) - Form II	14	0.06	0.89		

*Denotes a significant difference at the .05 level.

TABLE 21

COMPARISONS OF DATA FROM STATEMENT #4
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #4

- Form I Teachers in an open-space school should be given autonomy in the planning and performance of their work.
- Form II Teachers should be given autonomy in the planning and performance of their work.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	2.33	0.44	72	0.319
Teachers' Averages - Form II	23	2.29	0.41		
Principals' Averages - Form I	22	1.91	0.60	57	-1.270
Principals' Averages - Form II	14	2.29	0.96		
Differences (T-P) - Form I	22	0.42	0.68	57	1.628
Differences (T-P) - Form II	14	-0.06	0.97		

TABLE 22

COMPARISONS OF DATA FROM STATEMENT #5
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #5

- Form I While every child in an open-space school should have an individual space for personal storage, the vast majority of the space should be organized for the shared use of all the students.
- Form II While every child in a school should have an individual space for personal storage, the vast majority of the space should be organized for the shared use of all the students.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.83	0.19	72	-1.899
Teachers' Averages - Form II	23	2.01	0.43		
Principals' Averages - Form I	22	1.86	0.81	57	0.022
Principals' Averages - Form II	14	1.86	0.99		
Differences (T-P) - Form I	22	0.00	0.80	57	-0.240
Differences (T-P) - Form II	14	0.08	1.10		

TABLE 23

COMPARISONS OF DATA FROM STATEMENT #6
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #6

- Form I The open-space school should promote informal relationships between students and teachers.
- Form II The school should promote informal relationships between students and teachers.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	2.03	0.36	72	-2.183*
Teachers' Averages - Form II	23	2.33	0.53		
Principals' Averages - Form I	22	1.82	0.57	57	-0.123
Principals' Averages - Form II	14	1.86	0.99		
Differences (T-P) - Form I	22	0.25	0.63	57	-0.587
Differences (T-P) - Form II	14	0.46	1.19		

*Denotes a significant difference at the .05 level.

TABLE 24

COMPARISONS OF DATA FOR STATEMENT #7

FOR $H_0: \mu_W = \mu_{WO}$

Statement #7

- Form I Students in open-space schools should be allowed to progress through curriculum materials at their own individual rates of speed.
- Form II Students should be allowed to progress through curriculum materials at their own individual rates of speed.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.74	0.52	72	-1.719
Teachers' Averages - Form II	23	1.97	0.41		
Principals' Averages - Form I	22	1.64	0.71	57	-0.339
Principals' Averages - Form II	14	1.71	0.59		
Differences (T-P) - Form I	22	0.13	0.77	57	-0.666
Differences (T-P) - Form II	14	0.29	0.69		

TABLE 25

COMPARISONS OF DATA FROM STATEMENT #8

FOR $H_0: \mu_W = \mu_{WO}$

Statement #8

- Form I In an open-space school instructional groups should be based solely on teacher judgment and observation.
- Form II Instructional groupings should be based solely on teacher judgment and observation.

	N	\bar{X}	S.D.	df	t
Teachers' Averages-Form I	24	3.75	0.33	72	1.560
Teachers' Averages - Form II	23	3.54	0.44		
Principals' Averages - Form I	22	3.77	1.04	57	-0.718
Principals' Averages - Form II	14	4.00	0.76		
Differences (T-P) - Form I	22	-0.04	0.96	57	1.389
Differences (T-P) - Form II	14	-0.53	0.89		

TABLE 26

COMPARISONS OF DATA FROM STATEMENT #9
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #9

Form I The staff of an open-space schools should be expected to be innovative and to experiment with new methods and materials.

Form II Teachers should be expected to be innovative and to experiment with new methods and materials.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.84	0.31	72	1.735
Teachers' Averages - Form II	23	1.70	0.25		
Principals' Averages - Form I	22	1.90	0.60	57	1.038
Principals' Averages - Form II	14	1.71	0.45		
Differences (T-P) - Form I	22	-0.07	0.57	57	-0.384
Differences (T-P) - Form II	14	0.00	0.36		

TABLE 27

COMPARISONS OF DATA FROM STATEMENT #10
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #10

Form I The teacher in an open-space school should not hide his/her emotional responses to individuals and events.

Form II A teacher should not hide his/her emotional responses to individuals and events.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	2.53	0.31	72	0.364
Teachers' Averages - Form II	23	2.49	0.62		
Principals' Averages - Form I	22	2.18	0.78	57	-1.052
Principals' Averages - Form II	14	2.50	0.82		
Differences (T-P) - Form I	22	0.37	0.72	57	1.451
Differences (T-P) - Form II	14	-0.06	0.85		

TABLE 28

COMPARISONS OF DATA FOR STATEMENT #11

FOR $H_0: \mu_W = \mu_{WO}$

Statement #11

Form I The open-space school should eliminate competition and foster the growth of cooperation between students.

Form II The school should eliminate competition and foster the growth of cooperation between students.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	2.43	0.44	72	-1.440
Teachers' Averages - Form II	23	2.64	0.64		
Principals' Averages - Form I	22	2.36	1.15	57	-0.552
Principals' Averages - Form II	14	2.57	1.18		
Differences (T-P) - Form I	22	0.10	1.13	57	0.359
Differences (T-P) - Form II	14	-0.03	0.98		

TABLE 29

COMPARISONS OF DATA FROM STATEMENT #12

FOR $H_0: \mu_W = \mu_{WO}$

Statement #12

Form I In an open-space school conflict should be recognized and worked out within the context of the group.

Form II Conflict in a school should be recognized and worked out within the context of the group.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.84	0.29	72	0.543
Teachers' Averages - Form II	23	1.88	0.28		
Principals' Averages - Form I	22	1.55	0.50	57	-1.111
Principals' Averages - Form II	14	1.71	0.45		
Differences (T-P) - Form I	22	0.34	0.52	57	0.996
Differences (T-P) - Form II	14	0.17	0.47		

TABLE 30

COMPARISONS OF DATA FROM STATEMENT #13
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #13

Form I The teacher in an open-space school should feel comfortable with students taking the initiative in learning.

Form II A teacher should feel comfortable with students taking the initiative in learning.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.74	0.27	72	-0.300
Teachers' Averages - Form II	23	1.77	0.42		
Principals' Averages - Form I	22	1.59	0.78	57	1.015
Principals' Averages - Form II	14	1.36	0.48		
Differences (T-P) - Form I	22	0.18	0.77	57	-0.525
Differences (T-P) - Form II	14	0.31	0.55		

TABLE 31

COMPARISONS OF DATA FROM STATEMENT #14
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #14

Form I There should be no fixed curriculum or courses of study in an open-space school.

Form II There should be no fixed curriculum or courses of study in a school.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	4.15	0.31	72	0.341
Teachers' Averages - Form II	23	4.13	0.26		
Principals' Averages - Form I	22	4.45	0.50	57	0.569
Principals' Averages - Form II	14	4.36	0.48		
Differences (T-P) - Form I	22	-0.30	0.41	57	-0.385
Differences (T-P) - Form II	14	-0.23	0.62		

TABLE 32

COMPARISONS OF DATA FROM STATEMENT #15

FOR $H_0: \mu_W = \mu_{WO}$

Statement #15

Form I In an open-space school learning activities should arise from students' interests and responses to materials.

Form II Learning activities should arise from students' interests and responses to materials.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	2.37	0.37	72	1.246
Teachers' Averages - Form II	23	2.21	0.53		
Principals' Averages - Form I	22	2.18	0.83	57	-0.568
Principals' Averages - Form II	14	2.36	0.81		
Differences (T-P) - Form I	22	0.21	0.82	57	1.248
Differences (T-P) - Form II	14	-0.16	0.80		

TABLE 33

COMPARISONS OF DATA FROM STATEMENT #16

FOR $H_0: \mu_W = \mu_{WO}$

Statement #16

Form I In an open-space school a student's progress should be judged in terms of his own abilities.

Form II A student's progress should be judged in terms of his own progress.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.61	0.31	72	-0.768
Teachers' Averages - Form II	23	1.68	0.31		
Principals' Averages - Form I	22	1.45	0.58	57	-0.179
Principals' Averages - Form II	14	1.50	0.50		
Differences (T-P) - Form I	22	0.17	0.61	57	0.043
Differences (T-P) - Form II	14	0.16	0.51		

TABLE 34

COMPARISONS OF DATA FROM STATEMENT #17
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #17

- Form I The approach to learning in an open-space school should be inter-disciplinary, that is, a child should not be expected to confine himself to a single subject such as mathematics when learning.
- Form II The approach to learning in school should be inter-disciplinary, that is, a child should not be expected to confine himself to a single subject such as mathematics when learning.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	2.25	0.40	72	0.975
Teachers' Averages - Form II	23	2.13	0.45		
Principals' Averages - Form I	22	2.18	1.07	57	0.733
Principals' Averages - Form II	14	1.93	0.80		
Differences (T-P) - Form I	22	0.07	1.19	57	-0.240
Differences (T-P) - Form II	14	0.16	0.86		

TABLE 35

COMPARISONS OF DATA FROM STATEMENT #18
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #18

- Form I The open-space school should provide students with an informal atmosphere in which they are able to move about without asking permission.
- Form II Schools should provide students with an informal atmosphere in which they are able to move about without asking permission.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	2.43	0.39	72	-0.986
Teachers' Averages - Form II	23	2.56	0.56		
Principals' Averages - Form I	22	2.09	1.12	57	0.240
Principals' Averages - Form II	14	2.00	1.00		
Differences (T-P) - Form I	22	0.36	1.06	57	-0.416
Differences (T-P) - Form II	14	0.51	1.01		

TABLE 36

COMPARISONS OF DATA FROM STATEMENT #19
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #19

Form I Teachers in open-space schools should be involved in some form of team teaching.

Form II Teachers should be involved in some form of team teaching.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.69	0.32	72	-3.781*
Teachers' Averages - Form II	23	2.18	0.59		
Principals' Averages - Form I	22	1.36	0.48	57	-2.448*
Principals' Averages - Form II	14	1.93	0.70		
Differences (T-P) - Form I	22	0.35	0.46	57	0.877
Differences (T-P) - Form II	14	0.11	0.68		

*Denotes a significant difference at the .05 level.

TABLE 37

COMPARISONS OF DATA FROM STATEMENT #20
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #20

Form I The open-space school should operate on the principle that it is as important for student to live fully in the present as it is for them to prepare for the future.

Form II It is as important for students to live fully in the present as it is for them to prepare for the future.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.83	0.19	72	-1.146
Teachers' Averages - Form II	23	1.93	0.45		
Principals' Averages - Form I	22	1.55*	0.58	57	-1.671
Principals' Averages - Form II	14	2.00	1.13		
Differences (T-P) - Form I	22	0.29	0.55	57	1.113
Differences (T-P) - Form II	14	-0.05	1.39		

TABLE 38

COMPARISONS OF DATA FROM STATEMENT #21
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #21

Form I Informal talking between students in an open-space school should be encouraged as an aid to learning.

Form II Informal talking between students in school should be encouraged as an aid to learning.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	2.23	0.42	72	0.091
Teachers' Averages - Form II	23	2.22	0.47		
Principals' Averages - Form I	22	2.00	0.90	57	-0.231
Principals' Averages - Form II	14	2.07	0.80		
Differences (T-P) - Form I	22	0.27	0.71	57	0.173
Differences (T-P) - Form II	14	0.22	0.89		

TABLE 39

COMPARISONS OF DATA FROM STATEMENT #22
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #22

Form I In an open-space school students should be encouraged to use materials in many different ways including some the teacher had not foreseen.

Form II Students should be encouraged to use materials in many different ways including some the teacher has not foreseen.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.73	0.19	72	-0.302
Teachers' Averages - Form II	23	1.76	0.42		
Principals' Averages - Form I	22	1.50	0.50	57	0.418
Principals' Averages - Form II	14	1.43	0.49		
Differences (T-P) - Form I	22	0.25	0.50	57	-0.737
Differences (T-P) - Form II	14	0.40	0.56		

TABLE 40

COMPARISONS OF DATA FROM STATEMENT #23

FOR $H_0: \mu_W = \mu_{WO}$

Statement #23

- Form I The teacher in an open-space school should use each child's interaction with materials, equipment, and the environment as the basis for his/her instruction.
- Form II The teacher should use each child's interaction with materials, equipment, and the environment as the basis for his/her instruction.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	2.18	0.29	72	0.413
Teachers' Averages - Form II	23	2.14	0.46		
Principals' Averages - Form I	22	1.91	1.00	57	-1.038
Principals' Averages - Form II	14	2.21	0.86		
Differences (T-P) - Form I	22	0.28	1.02	57	0.888
Differences (T-P) - Form II	14	0.01	0.86		

TABLE 41

COMPARISONS OF DATA FROM STATEMENT #24

FOR $H_0: \mu_W = \mu_{WO}$

Statement #24

- Form I The progress of students in an open-space school should be reported to parents verbally without the use of a scale based on some standard or norm.
- Form II The progress of students in school should be reported to parents verbally without the use of a scale based on some standard or norm.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	2.60	0.51	72	-0.501
Teachers' Averages - Form II	23	2.69	0.74		
Principals' Averages - Form I	22	2.50*	1.34	57	-0.516
Principals' Averages - Form II	14	2.71	1.22		
Differences (T-P) - Form I	22	0.12	1.19	57	0.437
Differences (T-P) - Form II	14	-0.04	0.97		

TABLE 42

COMPARISONS OF DATA FROM STATEMENT #25
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #25

Form I In an open-space school factors such as motivation, self-direction, self-concept, responsibility, and peer relations are equally as important as academic achievement.

Form II Factors such as motivation, self-direction, self-concept, responsibility, and peer relations are equally as important as academic achievement.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.65	0.30	72	2.204*
Teachers' Averages - Form II	23	1.48	0.29		
Principals' Averages - Form I	22	1.59	0.72	57	0.376
Principals' Averages - Form II	14	1.50	0.82		
Differences (T-P) - Form I	22	0.10	0.61	57	0.649
Differences (T-P) - Form II	14	-0.06	0.87		

*Denotes a significant difference at the .05 level.

TABLE 43

COMPARISONS OF DATA FROM STATEMENT #26
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #26

Form I There should be no fixed daily schedule of events in an open-space school.

Form II There should be no fixed daily schedule of events in a school.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	3.95	0.32	72	0.641
Teachers' Averages - Form II	23	3.87	0.44		
Principals' Averages - Form I	22	3.86	0.97	57	0.024
Principals' Averages - Form II	14	3.86	0.64		
Differences (T-P) - Form I	22	0.10	1.01	57	-0.023
Differences (T-P) - Form II	14	0.11	0.89		

TABLE 44

COMPARISONS OF DATA FROM STATEMENT #27
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #27

- Form I The organization of the open-space school should be based on multi-age/multi-grade groupings, that is, family-type groups composed of children of several ages and grade levels.
- Form II The organization of a school should be based on multi-age/multi-grade groupings, that is, family-type groups composed of children of several ages and grade levels.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	2.67	0.47	72	-1.272
Teachers' Averages - Form II	23	2.85	0.66		
Principals' Averages - Form I	22	2.50	1.20	57	0.599
Principals' Averages - Form II	14	2.29	0.96		
Differences (T-P) - Form I	22	0.19	0.87	57	-1.207
Differences (T-P) - Form II	14	0.56	0.90		

TABLE 45

COMPARISONS OF DATA FROM STATEMENT #28
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #28

- Form I Teachers in an open-space school should play a major role in the formulation of school policy.
- Form II Teachers should play a major role in the formulation of school policy.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.90	0.23	72	0.912
Teachers' Averages - Form II	23	1.81	0.41		
Principals' Averages - Form I	22	1.77	0.52	57	-0.061
Principals' Averages - Form II	14	1.79	0.41		
Differences (T-P) - Form I	22	0.12	0.51	57	0.763
Differences (T-P) - Form II	14	-0.04	0.52		

TABLE 46

COMPARISONS OF DATA FROM STATEMENT #29
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #29

Form I One should expect to find a great number and variety of activities going on simultaneously in an open-space school.

Form II One should expect to find a great number and variety of activities going on simultaneously in a school setting.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.78	0.27	72	0.528
Teachers' Averages - Form II	23	1.73	0.33		
Principals' Averages - Form I	22	1.45	0.50	57	0.117
Principals' Averages - Form II	14	1.43	0.49		
Differences (T-P) - Form I	22	0.34	0.51	57	-0.028
Differences (T-P) - Form II	14	0.34	0.60		

TABLE 47

COMPARISONS OF DATA FROM STATEMENT #30
 FOR $H_0: \mu_W = \mu_{WO}$

Statement #30

Form I In an open-space school the teacher should encourage the exercise of real choice and independence in students.

Form II A teacher should encourage the exercise of real choice and independence in students.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.83	0.22	72	0.835
Teachers' Averages - Form II	23	1.75	0.39		
Principals' Averages - Form I	22	1.73	0.54	57	0.885
Principals' Averages - Form II	14	1.57	0.49		
Differences (T-P) - Form I	22	0.11	0.38	57	0.010
Differences (T-P) - Form II	14	0.11	0.65		

TABLE 48

COMPARISONS OF DATA FROM STATEMENT #31
FOR $H_0: \mu_W = \mu_{WO}$

Statement #31

Form I The staff of an open-space school should be willing to accept frequent and continuing change.

Form II Teachers should be willing to accept frequent and continuing change.

	N	\bar{X}	S.D.	df	t
Teachers' Averages - Form I	24	1.80	0.28	72	-0.806
Teachers' Averages - Form II	23	1.87	0.40		
Principals' Averages - Form I	22	1.64	0.71	57	0.317
Principals' Averages - Form II	14	1.57	0.49		
Differences (T-P) - Form I	22	0.19	0.62	57	-0.169
Differences (T-P) - Form II	14	0.22	0.64		

It is very apparent from the data received in this study that teachers and administrators in open-space schools are in agreement concerning the purposes and functions of those schools. The data presented in Tables 49-52 give precise information relative to the degree of agreement or disagreement for the items. The major conclusion reached is that the individual items, constituting the instrument, do indeed describe the status of affairs in Iowa open-space schools.

Only three items (8, 14, 26) were disagreed with by both teachers and principals.

The agreed-upon items form an excellent foundation for each open-space school in building and describing its set of educational beliefs and practices.

The data show quite clearly what Iowa educators teaching in elementary open-space schools feel the purposes of the school to be. Specifically, the open-space school teachers in Iowa support the following statements:

- (1) Involves some form of teach teaching.
- (2) The staff accepts frequent and continuing change.
- (3) The school supports innovation and experimentation with methods and materials.
- (4) The teachers share a major role in formulating school policy.
- (5) Teachers expect to be given autonomy in planning and executing their work.

- (6) Students are provided many alternative ways to accomplish learning tasks.
- (7) The student's progress is judged in terms of his/her own abilities.
- (8) Students are allowed to progress through the curriculum at their own individual rates.
- (9) Students are allowed to take the initiative in their learning tasks.
- (10) Students are encouraged to exercise real choice and independence.
- (11) When conflict occurs, it is recognized and worked out within the context of the group.
- (12) Teachers and students exhibit informal relationships.
- (13) Students are encouraged to evaluate their own progress.
- (14) Teachers utilize the student's interaction with materials, equipment, and the environment as their guides to instructional programs.
- (15) Students learn through the interdisciplinary approach to subject matter.
- (16) Learning activities arise from student's interest and response to materials.
- (17) Academic achievement is important but so are other factors such as motivation, self-direction, self-concept, peer relations, and self-responsibility.
- (18) Students are encouraged to utilize materials in as many ways as possible.
- (19) Many activities will be going on simultaneously.
- (20) The majority of space in the school is shared by students.
- (21) Students are allowed to talk informally with each other as an aid to learning.
- (22) The schools foster cooperation among students and eliminate competition.
- (23) The students are allowed to move about informally with little emphasis on receiving permission.

The same teachers and principals rejected the following as purposes or beliefs of the elementary open-space schools:

- (1) The school should operate with no fixed daily schedule of events.
- (2) Grouping should be based solely on teacher judgment.
- (3) There should be no fixed curriculum or course of study.

TABLE 49

SUMMARY OF AGREEMENT OR DISAGREEMENT ON ITEMS GROUPED
INTO THE THREE MAJOR CATEGORIES

Group I - Teachers N = 248

Administration and Organization Items

Agree 1.00-2.49*		Undecided 2.50-3.49		Disagree 3.50-5.00	
Item	Rating	Item	Rating	Item	Rating
19	1.69	27	2.67	26	3.95
31	1.80				
9	1.84				
28	1.90				
4	2.33				

Teachers and Training Items

Agree 1.00-2.49		Undecided 2.50-3.49		Disagree 3.50-5.00	
Item	Rating	Item	Rating	Item	Rating
1	1.50	10	2.53	8	3.75
16	1.61	24	2.60		
7	1.74				
13	1.74				
30	1.83				
12	1.84				
6	2.03				
2	2.15				
23	2.18				
17	2.25				
15	2.37				

Students and Curriculum Items

Agree 1.00-2.49		Undecided 2.50-3.49		Disagree 3.50-5.00	
Item	Rating	Item	Rating	Item	Rating
25	1.65			14	4.15
22	1.73				
29	1.78				
5	1.83				
20	1.83				
3	2.07				
21	2.23				
11	2.43				
18	2.43				

*The lower the rating the more the respondents agreed with the specific item. The lowest rating is 1.00; the highest (disagreed) is 5.00.

TABLE 50

SUMMARY OF AGREEMENT OR DISAGREEMENT ON ITEMS GROUPED
INTO THE THREE MAJOR CATEGORIES

Group II - Teachers N = 187

Administration and Organization Items

Agree 1.00-2.49*		Undecided 2.50-3.49		Disagree 3.50-5.00	
Item	Rating	Item	Rating	Item	Rating
9	1.70	27	2.85	26	3.87
28	1.81				
31	1.87				
19	2.18				
4	2.29				

Teachers and Training Items

Agree 1.00-2.49		Undecided 2.50-3.49		Disagree 3.50-5.00	
Item	Rating	Item	Rating	Item	Rating
1	1.57	24	2.58	7	3.54
16	1.68				
30	1.75				
13	1.77				
12	1.88				
7	1.97				
17	2.13				
23	2.14				
15	2.21				
2	2.33				
10	2.49				

Students and Curriculum Items

Agree 1.00-2.49		Undecided 2.50-3.49		Disagree 3.50-5.00	
Item	Rating	Item	Rating	Item	Rating
25	1.48	18	2.56	14	4.13
29	1.73	11	2.64		
22	1.76				
3	1.82				
20	1.93				
5	2.01				
21	2.22				

*The lower the rating the more the respondents agreed with the specific item. The lowest rating is 1.00; the highest (disagreed) is 5.00.

TABLE 51

SUMMARY OF AGREEMENT OR DISAGREEMENT ON ITEMS GROUPED
INTO THE THREE MAJOR CATEGORIES

Group I - Principals N = 22

Administration and Organization Items

Agree 1.00-2.49*		Undecided 2.50-3.49		Disagree 3.50-5.00	
Item	Rating	Item	Rating	Item	Rating
19	1.36	27	2.50	26	3.86
31	1.64				
28	1.77				
9	1.90				
4	1.91				

Teachers and Training Items

Agree 1.00-2.49		Undecided 2.50-3.49		Disagree 3.50-5.00	
Item	Rating	Item	Rating	Item	Rating
16	1.45	24	2.50	8	3.77
1	1.50				
12	1.55				
13	1.59				
7	1.64				
30	1.73				
6	1.82				
2	1.91				
23	1.91				
10	2.18				
15	2.18				

Students and Curriculum Items

Agree 1.00-2.49		Undecided 2.50-3.49		Disagree 3.50-5.00	
Item	Rating	Item	Rating	Item	Rating
29	1.45			14	4.45
22	1.50				
20	1.55				
25	1.59				
3	1.73				
5	1.86				
21	2.00				
18	2.09				
11	2.36				

*The lower the rating the more the respondents agreed with the specific item. The lowest rating is 1.00; the highest (disagreed) is 5.00.

TABLE 52

SUMMARY OF AGREEMENT OR DISAGREEMENT ON ITEMS GROUPED
INTO THE THREE MAJOR CATEGORIES

Group II - Principals N = 14

Administration and Organization Items

Agree 1.00-2.49*		Undecided 2.50-3.49	Disagree 3.50-5.00		
Item	Rating	Item	Rating	Item	Rating
31	1.57			26	3.86
9	1.71				
28	1.79				
19	1.93				
4	2.29				
27	2.29				

Teachers and Training Items

Agree 1.00-2.49		Undecided 2.50-3.49	Disagree 3.50-5.00		
Item	Rating	Item	Rating	Item	Rating
22	1.43	11	2.57	14	4.36
29	1.43				
25	1.50				
3	1.64				
5	1.86				
18	2.00				
20	2.00				
21	2.07				

Students and Curriculum Items

Agree 1.00-2.49		Undecided 2.50-3.49	Disagree 3.50-5.00		
Item	Rating	Item	Rating	Item	Rating
22	1.43	11	2.57	14	4.36
29	1.43				
25	1.50				
3	1.64				
5	1.86				
18	2.00				
20	2.00				
21	2.07				

*The lower the rating the more the respondents agreed with the specific item. The lowest rating is 1.00; the highest (disagreed) is 5.00.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

Restatement of the Purpose

The purpose of this study was to determine what the professional staff members of open-space elementary schools consider to be the purposes of those schools by measuring their reactions to statements relating to purpose extracted from the literature on open-space schools. This was done by testing the following hypothesis:

1. There will be no significant differences between the reactions of the professional staff members of open-space elementary schools to statements relating to purpose which include the term "open-space" and their reactions to the same statements when the term "open-space" has been omitted.

The data were gathered to test the hypothesis by means of a questionnaire which was mailed to Iowa elementary schools that had identified themselves as open-space buildings.

Half of the open-space schools received a form of the questionnaire in which the statements contained the term "open-space." A second form in which the statements did not contain the term "open-space" was sent to the remaining open-space schools. Teachers and principals were asked to express their feelings about thirty-one statements on a five point Likert type scale which ranged from strongly agree to strongly disagree. Comparisons were made to test the hypothesis discussed above.

Analysis of the Data

The forty-seven schools which participated in the study were divided into two treatment groups as follows: Group 1 was composed of open-space schools whose staffs received questionnaires with the term "open-space" in the statements; and Group 2 was made up of open-space schools whose staffs received questionnaires without the term "open-space" in the statements.

The data from the 471 usable responses were keypunched and divided according to the groups discussed above. The data from principals were kept separate from that of teachers in each group. A program was devised to determine the teacher average response for each building. It also reported the difference between the teacher average responses and the principal's response for each building. A separate analysis of variance using Fisher's lsd procedure was run between the two treatment groups for each of the groups of scores; i.e., teacher averages, principals, and the differences between the two.

The hypothesis stated above was tested by comparing the data from Group 1 with that from Group 2.

Limitations

The following were viewed as specific limitations which influenced the interpretations of the data:

The geographical area was limited to the state of Iowa.

The survey which served as the basis for the sample of open-space schools used self-identification to determine whether or not the school was housed in an open-space building. Five of the sixty-five open-space schools originally contacted for this study responded with the message that they did not consider themselves open-space schools.

The statements in the questionnaire were extracted from the literature on open-space. Although a thorough search was made of the literature, there is no guarantee that all of the statements represent purposes of open-space schools or that all the purposes are represented by the statements.

Even though the statements which made up the questionnaire were extracted from the literature on open-space, any one or all of them could represent purposes of a conventionally designed school.

The statements on the questionnaire were checked by a panel and refined before it was submitted to the sample, however, there is no guarantee that every statement was truly representative of a purpose of an elementary school.

Demographic Data

With the exception of age and total years of experience, there were no major differences between groups for the various items of demographic data requested.

Group 1 and Group 2 Comparisons

When the statements of the questionnaire focused the respondents' attention on open-space, the reactions were much the same as when the statements made no mention of open-space. Both groups disagreed with three statements (#8, #14, and #26). The fact that all three were unequivocally stated leaving no options for the respondents may have accounted for the unanimous rejection. There were no significant differences between degree of disagreement to these three statements.

The mean responses of both principals and teachers registered agreement for all the other statements. There was a tendency for principals to be more agreeable than teachers, however, their mean scores tended to be less stable than those of the teachers. None of the differences between principals and teachers proved to be significant.

When the mean reactions of open-space teachers who responded to one form of the questionnaire were compared with those who responded to the other form, those whose attention was drawn to open-space tended to react more positively than the others. However, their mean reactions were less stable. This same pattern held true for the mean reactions of the principals in the two groups.

The reactions of principals were more similar than those of teachers. Whereas there was a statistically significant difference in the reactions of the teachers to four statements, principals disagreed to that extent on only one.

Recommendations

From the similarity of the data obtained from open-space teachers and that obtained from teachers from conventional buildings, it would appear that there is a need for more involvement by open-space teachers in discussions

which clarify the purposes of their open-space elementary schools. If the thought is the father of the deed, it is highly unlikely that teachers are taking full advantage of the possibilities the open-space facilities offer.

It is suggested that faculties of open-space schools devote effort toward a very precise definition of those statements reflected of strong agreement. For example, there is strong agreement within open-space schools that a student's progress should be judged in terms of his/her own abilities (item #16). This recommendation would expect faculties to define specifically the abilities to be considered. The school's faculty should identify the major abilities implied in the statement (intellectual, physical, creative, social). The intellectual abilities would be further explicated into the various types, i.e., verbal, perceptual, spatial, memory, visual, auditory, etc .

A detailed explanation for each agreed-upon statement would allow a faculty to become very cohesive in directing its efforts toward educating the student. (See Tables 49-52 for summaries.)

As reported earlier in this study, open-space schools were primarily the result of the demands for flexible space placed upon buildings by team teaching. Considering the reactions to the statement on team teaching by both open-space principals and teachers, it would appear that there is a need for all the members of the professional staffs of open-space schools to become better acquainted with the educational developments which gave rise to this type of building and to receive in-service training in the possible uses of such a facility.

Based on the responses of principals of open-space schools in this study, it would appear that the type of training discussed above would be especially beneficial to them if they are to provide the leadership which will bring about maximum utilization of their open-space facilities.

Recommendations for Further Study

Further research should be conducted on this subject on a more practical level comparing individuals' attitudes about the purposes of open-space with their actual practices in the open-space facilities.

An investigation into the divergence between what the professionals in open-space feel the purposes should be and what they feel the purposes actually are would also be worthwhile because it would clarify the purposes of open-space elementary schools and could lead to research which would investigate the question of whether or not open-space elementary schools are living up to expectations.

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Dear Educator:

I am seeking your assistance in a project designed to assess the attitudes of Iowa elementary school teachers and principals with respect to statements relating to the purposes of open-space schools found in the literature on open-space. In order for this study to be accurate, it is important that you complete each item within the questionnaire. Would you kindly take a few minutes from your busy schedule to complete this form and return it to your principal so that he or she can mail it to me by the end of the week?

No reference will be made to you, your school, or your school system. The success of this study is contingent upon your cooperation. I need and appreciate your help.

Thank you.

Note: Numbers in parentheses next to each statement are for key-punch purposes. Please disregard them.

GENERAL INFORMATION

Please place a mark (X) in front of the response which best describes your or your situation. Please answer each item.

1. Current position.

____ 1. Teacher ____ 2. Principal (11)

2. Age.

____ 1. 20-29 ____ 2. 30-39 ____ 3. 40-49 ____ 4. 50-59
 ____ 5. 60-69 (12)

3. Please indicate number of years as an elementary teacher.

1. 0-4 3. 10-14 5. 20-24 7. 30-34 9. 40 or (13)

2. 5-9 4. 15-19 6. 25-29 8. 35-39

4. Please indicate number of years as an elementary teacher in this district.

1. 0-2 3. 5-6 5. 9-10 7. 13-14 9. 17 or (14)
more

2. 3-4 4. 7-8 6. 11-12 8. 15-16

5. Please indicate number of years as a teacher in open-space.

1. none 2. 1-2 3. 3-4 4. 5-6 5. 7 or (15)
more

6. Please indicate the level at which you teach.

1. Primary (K-2) 2. Intermediate (3-4) 3. Upper (16)
(5-6)

7. Please indicate the number of teachers on the staff of your school.

1. 1-3 3. 7-9 5. 13-15 7. 19-21 9. 25 or (17)
more

2. 4-6 4. 10-12 6. 16-18 8. 22-24

8. Please indicate how you came to be in your present teaching position in this school.

1. Requested this placement. 3. This school replaced (18)
the one I previously

2. Assigned to this position. taught in.

Directions:

Kindly indicate how you feel about each of the following items by circling the number in the right hand column that most closely describes your belief about that statement. (Your own belief, not necessarily what exists in your system.)

	Strongly agree	Agree	No opinion	Disagree	Strongly disagree	
1. The open-space school should provide students with many alternative ways to accomplish a learning task.	1	2	3	4	5	(20)
2. The teacher in an open-space school should encourage students to evaluate their own progress and to continue through materials without always checking with the teacher.	1	2	3	4	5	(21)
3. The philosophy of the open-space school should include the belief that the way a student acquires and uses knowledge is more important than the knowledge itself.	1	2	3	4	5	(22)
4. Teachers in an open-space school should be given autonomy in the planning and performance of their work.	1	2	3	4	5	(23)
5. While every child in an open-space school should have an individual space for personal storage, the vast majority of the space should be organized for the shared use of all the students.	1	2	3	4	5	(24)
6. The open-space school should promote informal relationships between students and teachers.	1	2	3	4	5	(25)
7. Students in open-space schools should be allowed to progress through curriculum materials at their own individual rates of speed.	1	2	3	4	5	(26)
8. In an open-space school instructional groupings should be based solely on teacher judgement and observation.	1	2	3	4	5	(27)

	SA	A	NO	D	SD	
9. The staff of an open-space school should be expected to be innovative and to experiment with new methods and materials.	1	2	3	4	5	(28)
10. The teacher in an open-space school should not hide his/her emotional responses to individuals and events.	1	2	3	4	5	(29)
11. The open-space school should eliminate competition and foster the growth of cooperation between students.	1	2	3	4	5	(30)
12. In an open-space school conflict should be recognized and worked out within the context of the group.	1	2	3	4	5	(31)
13. The teacher in an open-space school should feel comfortable with students taking the initiative in learning.	1	2	3	4	5	(32)
14. There should be no fixed curriculum or courses of study in an open-space school.	1	2	3	4	5	(33)
15. In an open-space school learning activities should arise from students' interests and responses to materials.	1	2	3	4	5	(34)
16. In an open-space school a student's progress should be judged in terms of his own abilities.	1	2	3	4	5	(35)
17. The approach to learning in an open-space school should be interdisciplinary, that is, a child should not be expected to confine himself to a single subject such as mathematics when learning.	1	2	3	4	5	(36)
18. The open-space school should provide students with an informal atmosphere in which they are able to move about without asking permission.	1	2	3	4	5	(37)
19. Teachers in an open-space school should be involved in some form of team teaching.	1	2	3	4	5	(38)

	SA	A	NO	D	SD	
20. The open-space school should operate on the principal that it is as important for students to live fully in the present as it is for them to prepare for the future.	1	2	3	4	5	(39)
21. Informal talking between students in an open-space school should be encouraged as an aid to learning.	1	2	3	4	5	(40)
22. In an open-space school students should be encouraged to use materials in different ways including some the teacher has not foreseen.	1	2	3	4	5	(41)
23. The teacher in an open-space school should use each child's interaction with materials, equipment, and the environment as the basis for his/her instruction.	1	2	3	4	5	(42)
24. The progress of students in an open-space school should be reported to parents verbally without the use of a scale based on some standard or norm.	1	2	3	4	5	(43)
25. In an open-space school factors such as motivation, self-direction, self-concept, responsibility, and peer relations are equally as important as academic achievement.	1	2	3	4	5	(44)
26. There should be no fixed daily schedule of events in an open-space school.	1	2	3	4	5	(45)
27. The organization of the open-space school should be based on multi-age/multi-grade groupings, that is, family-type groups composed of children of several ages and grade levels.	1	2	3	4	5	(46)
28. Teachers in an open-space school should play a major role in the formulation of school policy.	1	2	3	4	5	(47)
29. One should expect to find a great number and variety of activities going on simultaneously in an open-space school.	1	2	3	4	5	(48)

SA A NO D SD

30. In an open-space school the teacher should encourage the exercise of real choice and independence in students. 1 2 3 4 5 (49)
31. The staff of an open-space school should be willing to accept frequent and continuing change. 1 2 3 4 5 (50)

Dear Educator:

I am seeking your assistance in a project designed to assess the attitudes of Iowa elementary school teachers and principals with respect to statements relating to the purposes of open-space schools found in the literature on open-space. In order for this study to be accurate, it is important that you complete each item within the questionnaire. Would you kindly take a few minutes from your busy schedule to complete this form and return it to your principal so that he or she can mail it to me by the end of the week?

No reference will be made to you, your school, or your school system. The success of this study is contingent upon your cooperation. I need and appreciate your help.

Thank you.

Note: Numbers in parentheses next to each statement are for key-punch purposes. Please disregard them.

GENERAL INFORMATION

Please place a mark (X) in front of the response which best describes you or your situation. Please answer each item.

1. Current position.

1. Teacher 2. Principal (11)

2. Age.

1. 20-29 2. 30-39 3. 40-49 4. 50-59
 5. 60-69 (12)

3. Please indicate number of years as an elementary teacher.

1. 0-2 3. 5-6 5. 9-10 7. 13-14 9. 17 or (14)
 2. 3-4 4. 7-8 6. 11-12 8. 15-16

4. Please indicate number of years as an elementary teacher in this district.
- ___ 1. 0-2 ___ 3. 5-6 ___ 5. 9-10 ___ 7. 13-14 ___ 9. 17 or (14)
 ___ 2. 3-4 ___ 4. 7-8 ___ 6. 11-12 ___ 8. 15-16 more
5. Please indicate number of years as a teacher in open-space.
- ___ 1. none ___ 2. 1-2 ___ 3. 3-4 ___ 4. 5-6 ___ 5. 7 or (15)
 more
6. Please indicate the level at which you teach.
- ___ 1. Primary (K-2) ___ 2. Intermediate (3-4) ___ 3. Upper (16)
 (5-6)
7. Please indicate the number of teachers on the staff of your school.
- ___ 1. 1-3 ___ 3. 7-9 ___ 5. 13-15 ___ 7. 19-21 ___ 9. 25 or (17)
 more
 ___ 2. 4-6 ___ 4. 10-12 ___ 6. 16-18 ___ 8. 22-24
8. Please indicate how you came to be in your present teaching position in this school.
- ___ 1. Requested this placement. ___ 3. This school replaced (18)
 the one I previously
 taught in.
 ___ 2. Assigned to this position.

Directions:

Kindly indicate how you feel about each of the following items by circling the number in the right hand column that most closely describes your belief about that statement. (Your own belief, not necessarily what exists in your system.)

	Strongly agreed	Agree	No opinion	Disagree	Strongly disagree	
1. Students should be provided with many alternative ways to accomplish a learning task.	1	2	3	4	5	(20)
2. The teacher should encourage students to evaluate their own progress and to continue through materials without always checking with the teacher.	1	2	3	4	5	(21)
3. The way a student acquires and uses knowledge is more important than the knowledge itself.	1	2	3	4	5	(22)
4. Teachers should be given autonomy in the planning and performance of their work.	1	2	3	4	5	(23)
5. While every child in a school should have an individual space for personal storage, the vast majority of the space should be organized for the shared use of all the students.	1	2	3	4	5	(24)
6. The school should promote informal relationships between students and teachers.	1	2	3	4	5	(25)
7. Students should be allowed to progress through curriculum materials at their own individual rates of speed.	1	2	3	4	5	(26)
8. Instructional groupings should be based solely on teacher judgment and observation.	1	2	3	4	5	(26)

	SA	A	NO	D	SA	
9. Teachers should be expected to be innovative and to experiment with new methods and materials.	1	2	3	4	5	(28)
10. A teacher should not hide his/her emotional responses to individuals and events.	1	2	3	4	5	(29)
11. The school should eliminate competition and foster the growth of cooperation between students.	1	2	3	4	5	(30)
12. Conflict in school should be recognized and worked out within the context of the group.	1	2	3	4	5	(31)
13. A teacher should feel comfortable with students taking the initiative in learning.	1	2	3	4	5	(32)
14. There should be no fixed curriculum or courses of study in a school.	1	2	3	4	5	(33)
15. Learning activities should arise from students' interests and responses to materials.	1	2	3	4	5	(34)
16. A student's progress should be judged in terms of his own abilities.	1	2	3	4	5	(35)
17. The approach to learning in school should be interdisciplinary, that is, a child should not be expected to confine himself to a single subject such as mathematics when learning.	1	2	3	4	5	(36)
18. School should provide students with an informal atmosphere in which they are able to move about without asking permission.	1	2	3	4	5	(37)
19. Teachers should be involved in some form of team teaching.	1	2	3	4	5	(38)
20. It is as important for students to live fully in the present as it is for them to prepare for the future.	1	2	3	4	5	(39)

	SA	A	NO	D	SD	
21. Informal talking between students in school should be encouraged as an aid to learning.	1	2	3	4	5	(40)
22. Students should be encouraged to use materials in many different ways including some the teacher has not foreseen.	1	2	3	4	5	(41)
23. The teacher should use each child's interaction with materials, equipment, and the environment as the basis for his/her instruction.	1	2	3	4	5	(42)
24. The progress of students in school should be reported to parents verbally without the use of a scale based on some standard or norm.	1	2	3	4	5	(43)
25. Factors such as motivation, self-direction, self-concept, responsibility, and peer relations are equally as important as academic achievement.	1	2	3	4	5	(44)
26. There should be no fixed daily schedule of events in a school.	1	2	3	4	5	(45)
27. The organization of a school should be based on multi-age/multi-grade groupings, that is, family-type groups composed of children of several ages and grade levels.	1	2	3	4	5	(46)
28. Teachers should play a major role in the formulation of school policy.	1	2	3	4	5	(47)
29. One should expect to find a great number and variety of activities going on simultaneously in a school setting.	1	2	3	4	5	(48)
30. A teacher should encourage the exercise of real choice and independence in students.	1	2	3	4	5	(49)
31. Teachers should be willing to accept frequent and continuing change.	1	2	3	4	5	(50)

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