SIXTH-GRADE STUDENTS' ATTITUDES TOWARD SCHOOL FROM AN OPEN-SPACE AND A TRADITIONALLY DESIGNED SCHOOL

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PREFACE

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CHAPTER I

THE RESEARCH PROBLEM

Introduction

During the past 20 years, many changes in curriculum and organization of the elementary school have been introduced. According to Otto (1970, p. 33) the most important and lasting curriculum movement has been focused upon providing for individual differences among pupils. He further notes that:

> . . . no major movements can be identified with the concept of adapting instruction to individual differences until the mid-50's epidemic to provide special schools and classes for academically talented pupils.

As cited by Gross (1971) specific changes in curriculum and organization took the form of new math, team teaching, programmed instruction, non-grading, and the use of television and the language laboratory.

The demand for change in elementary schools began to shift the focus of education from the teacher to the student. Two such trends are seen in the popularity of the Montessori method of instruction and the British infant school approach. According to one report (Academic Theory, 1970), the Montessori method of instruction focuses upon each child's developmental needs by providing exercises in language, muscular coordination, and color distinction. Each child progresses at his own pace as the emphasis is placed upon the child's experiences as a learner rather than the adult as a teacher. Further extension of the trend

toward school-centered instruction is seen in the British infant school approach. Hetzel (1969) discribed this approach as providing children an opportunity to learn according to their individual ability in an open-plan school with a free activity program. An open-plan school was described as a building in which the maximum use of space for learning took place by allowing children to utilize work benches in hallways, cloakrooms for large block building or floor work projects, and the classroom itself is sectioned into activity or learning areas. The free activity program was described as providing for the movement of children from one area or learning task to another throughout the day. The role of the teacher was seen as one who prepares materials, as one who was a source of guidance for acquisition of specific skills, and one who questioned and listened in addition to being an observer.

The movement toward student-centered instruction by the British infant school approach is seen in the United States by the increasing numbers of "open-space schools" or schools without interior walls. An article from American School and University (1965, p. 30), describing an open space school in California, indicated:

> In the Golden State, which is opening one new school every day, seventy-five percent of all school construction being planned includes some open teaching space. Twenty percent of the new schools contain nothing but open space.

The open-space school is a school building predominantly characterized by lack of interior walls. The reason for the lack of interior walls is to enhance the interior flexibility of the building needed to accommodate curriculum and organization changes to approach a more student-centered program similar to the British infant school approach. Several authors have noted that the open-space school design provides the

necessary physical facilities to accommodate such things as team teaching, large or small group instruction, homogenous or heterogenous grouping, and individual study (Anderson and Mitchell, 1960; Coody and Sandefur, 1967; Crews, 1967). Most of the articles available on open-space schools provide descriptions of a particular school (Dunbar, 1970), an instructional organization (Anderson and Mitchell, 1960; Coody and Sandefur, 1967; Crews, 1967), or an educational philosophy the school is designed to implement (Anderson, 1970). A few studies have focused upon more specific aspects of the open-space school. Ledbetter (1970) was interested in identifying the reactions of students and teachers to their open-space faciltity. He sent a 25 item checklist of environmental conditions to four elementary schools, four junior high schools, and two high schools. From the three school levels he received responses from 19, 20, and 10 students and teachers, respectively. The following are some of the conditions in an open-space school found to be liked by the occupants: carpet, comfortable atmosphere, small group instruction, and central location of materials centers. Kleparchuk (1970) studied opinions of teachers and principals of open-space elementary schools as to which supervisory services by the principal they considered desirable in order to improve classroom instruction. A few of the findings indicated that teachers wanted supervisory services that helped maintain good staff relations, that maintained a school climate conducive to open discussion for the staff, and that provided teacher input into program planning and policy making.

Few, if any, articles from the 1960's have offered specific data exclusively on the students' perceptions of the open-space school. Indeed, what are the attributes of students toward this change in

education? When questions arise concerning attitudes, more questions can be posed as to what variables potentially influence or are related to attitudes toward any given variable. Berelson and Steiner (1964) indicated that differences in attitudes stem from factors such as residence, ethnic status, class, age, and sex.

With regard to the relationship between students' attitudes toward school and socioeconomic status, Finley (1969) used a revised Student Opinion Poll to measure student satisfaction with school, a self-report questionnaire to measure student characteristics, and the Two Factor Index of Social Position to measure socioeconomic background. The findings did not support the belief that environment and experiential circumstances were directly related to school attitudes. Studies by Brodie (1964) and Godbold (1968) support Finley's finding of no significant relationship between socioeconomic status and students' attitudes toward school. The findings of the above cited studies disagree with Berelson and Steiner's (1964) viewpoint that attitudes are, in part, related to class. This disagreement may be due to the use of a global score to represent student attitudes toward school in Finley (1969) and Godbold's (1968) studies instead of more specific attitudes as suggested by Cullen (1969). Cullen found that attitudes toward school were multidimensional by factor analyzing the Eighth-Grade Student Opinion Poll (SOP). When the specific factors or components of the Eighth-Grade (SOP) were correlated with race and socioeconomic status several significant relationships were found. Further investigation of the relationship between socioeconomic class and more specific attitudes toward school is indicated.

Another variable that appeared to be significantly related to students' attitudes toward school was the type of verbal behavior

teachers use in a classroom. Flanders (1967a), in a study involving teacher influence, pupil attitudes, and achievement, found that achievement and student attitudes were significantly higher in classes where teachers' verbal behavior encouraged (indirect influence) rather than restricted (direct influence) student participation in class. Teacher influence was measured by observation techniques and data analysis referred to as verbal interaction analysis using the Flanders system. Amidon and Flanders (1967) cite numerous studies supporting their findings that indirect teacher influence rather than direct teacher influence is related to higher pupil achievement and more positive attitudes toward school. These studies covered areas such as pupil achievement on written language tests, in reading comprehension, and on a unit in biological science. Furthermore, Otto (1970, p. 32) in his review of literature on innovations in the elementary school curriculum made note of the need for developing proper research tools for gathering data on instruction in elementary schools as it actually takes place. In discussing whether or not objectives and content have changed in the elementary school, he related:

> As a matter of fact, if the criterion for judgment is what actually transpires in classrooms, there is precious little information to tell us whether objectives and content have changed during the past fifty years. No one has ever attempted to provide comprehensive data, even on a representative sample basis, of instruction in elementary schools as it actually takes place.

He continued his discussion by relating that observational systems such as Flanders have been limited to a few classrooms in one or several schools and not of the scope needed to discuss general changes in education across the country.

Indeed, the importance of monitoring what actually happens in a classroom should be one of the major areas of investigation when the introduction of any major innovation into the elementary school takes place. Once attitudes toward school are measured, of what use is the information? Knowledge about students' attitudes toward school may be beneficial with respect to what behaviors in the school environment the attitudes are related. One general behavior teachers, administrators, parents and students are usually concerned about is academic achievement. If academic achievement among a class or group of students decreases, someone usually wants to know why. Perhaps the reason for the decrease in academic achievement could be clarified by asking the students through an opinion poll which aspects of school they are satisfied with and with which aspects they are dissatisfied. However, the use of such an opinion poll is limited with respect to the problem described above without knowing the relationship between achievement and students' attitudes toward school. The question can be asked what is the relationship between academic achievement and attitudes toward school? Studies by Lahaderne (1968), Diedrich and Jackson (1969), Jackson and Lahaderne (1967) report no significant relationship between students' attitude toward school and academic achievement. Cullen (1969) indicated that the above studies used a single global score obtained from the Student Opinion Poll to represent a student's attitude toward school. He factor analyzed eighth-grade student responses to a modified Student Opinion Poll in order to determine specific student attitudes toward school and the relationships of these attitudes with achievement and ability scores. The analysis yielded four factors, of which two related significantly to scores on a standardized achievement

test. It was concluded that specific attitude scores, rather than a single global score, yield more sensitive data concerning student attitudes toward school. Further support for the use of specific attitude scores in describing school attitudes was found in a study by Neale, Gill, and Tismer (1970). The relationship between sixth-graders' attitudes toward school subjects and school achievement was studies using the semantic differential technique. Girls' attitudes correlated significantly with reading while boys' attitudes correlated significantly with social studies, arithmetic and reading. Cullen (1969) reported that his specific attitudes toward school were independent of sex membership.

In view of the difference in findings about the relationship between achievement and attitudes toward school, further studies seemed necessary. The present study focused upon attitudes toward school as multidimensional instead of unidimensional. By identifying more specific attitudes toward school, a better defined relationship with variables such as academic achievement and socioeconomic status may be described.

Statement of the Problem

The majority of articles and studies about the open-space school present information describing the physical plant, philosophical tenet, or administrators' and teachers' opinion of the school. With reference to students' attitudes toward school there are conflicting results. The current study will attempt to clarify these results by investigating the students' attitudes toward school as multidimensional and then relating

those specific attitudes toward school to variables such as the school attended, socioeconomic status, sex membership, and academic achievement.

Purpose of This Study

The purpose of the study was to describe the attitudes toward school of students enrolled in an open-space and a traditionally designed school. School attitudes were determined by administering a student opinion poll to sixth-grade students in both an open-space and a traditionally designed school, then factor analyzing the responses to determine the specific components of the students' attitudes toward school. The relationship of school attitudes with the variables of school, socioeconomic status, sex membership, and academic achievement were studied in addition to assessing the type of verbal interaction teachers were exhibiting in the classroom. These procedures form the foundation of the present study as reported in Chapter III.

Research Questions

The following research questions provided the emphasis of the present study:

1. What are students' "attitudes-toward-school" who are attending an open-space school and a traditionally designed school?

2. Are there relationships between the students' "attitudes-toward-school" and their socioeconomic status?

3. Are there relationships between sex membership and "attitude-toward-school?"

4. Are there relationships between the students' "attitudes-toward-school" and academic achievement?

5. Based on Flanders' interaction analysis of teachers' verbal behaviors in the classroom, do the teachers exhibit "direct" or "indirect" verbal interaction in the classroom?

Value of the Study

This study is of importance in providing more specific information about the open-space school from the students' point-of-view. Such information may be of benefit in evaluating the objectives of this type of school. Also, the data gathered by the factor analysis of the attitude measure may add clarification to the differing viewpoints of whether attitudes toward school should be considered unidimensional or multidimensional.

Definitions of Terms

1. Open-space school - The term "open-space" is defined as a school building designed with the elimination of interior walls for the purpose of creating more open interior space to allow greater flexibility for instructional grouping of students. A specific description of the open-space school included in the present study may be found in Chapter V.

2. Traditionally designed school - The term "traditionally designed" in the current study is defined as all school buildings in the public school system other than the open-space school. The traditional design generally is defined as a school building designed with individaul classrooms separated by fixed interior walls which tend to limit the number of students easily accommodated in one room.

3. "Direct" and "indirect" verbal interaction - These terms refer to the type of verbal interaction a teacher exhibits in the classroom (Flanders, 1967a). The type of verbal interaction (direct or indirect) is measured through the use of Flanders' interaction analysis (a method of classifying verbal behaviors of teachers). Teachers utilizing a more "direct" than "indirect" verbal interaction in a classroom employ more verbal statements that tend to restrict rather than encourage student participation.

4. Attitude toward school - School attitudes are operationally defined as scores on the Sixth-Grade Student Opinion Poll.

5. Socioeconomic status - This term is operationally defined as scores on Hollingshead's Two Factor Index of Social Position.

6. Academic achievement - Academic achievement is operationally defined as scores received on the Stanford Achievement Test.

Assumptions of the Study

It was assumed that responses of students to items of the Sixth-Grade Student Opinion Poll were representative of their true attitudes toward school. It was assumed that the possible Hawthorne effect of attending a brand new school should diminish by the end of the school year.

Limitations of the Study

One major limitation imposed when viewing the results of the current investigation is an inability to assume a cause and effect relationship between the variables of this study. The nature of this

research was descriptive; it is beyond the capability and intent of this study to account for the relationships between variables of this study.

Another limitation of the present study concerns the generalization of the results. The open-space school in this study may or may not be similar to other open-space schools, therefore, the reader should be cautious in generalizing the findings of this study to open-space schools other than the one included in this study.

Chapter Summary

The introductory chapter has presented the reader with the problems in general and the major variables under consideration. Chapter II will provide a review of the literature pertaining to the major variables of this study. Chapter III describes the sample included in the study and the procedures and instruments used in data collection. Chapter IV describes the results of the data analysis. Chapter V presents a summary of the findings and discusses the conclusions that may be derived from the findings. Recommendations for further research were made.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

This chapter presents a review of selected articles pertinent to the major variables of this study, the open-space school; attitudes toward school; socioeconomic status, sex membership, and academic achievement as related to school attitudes; and the type of teacher influence (direct or indirect) in the classroom and its relationship to school attitudes and achievement. A summary of the studies related to the major variables concludes this chapter.

The Open-Space School

Gross (1971), in his review of the literature on change in the elementary school curriculum, and Staples (1970), in his article on the open-space school, noted the arrival of the open-space school with its building designed to enhance the educational philosophy of developing a more student-centered rather than teacher-centered approach to instruction, to be in the 1960's. Articles specifically describing the open-space school also began to appear in the 1960's. The type of information presented in most of these articles varied from detailed descriptions of individual open-space schools to the type of building design that was necessary to accommodate the student-centered instructional approach.

Articles in The Instructor (1968) and American School and University (1965) both provided specific details about the design, purpose, and philosophy of a particular open-space school. The most distinctive feature about both schools was noted to be the lack of interior partitions to permit the maximum amount of flexibility in use of space. In addition to learning centers that contain teaching machines, audio-visual equipment, and reference materials, a description of flexible instructional grouping of students, team teaching organization of teachers, and specific curriculum operation was presented.

Articles by Spodek (1970), Staples (1970), Eberle (1969), and Crews (1966) discussed the philosophy of the open-space school.

In addition to presenting the philosophy of the open-space school, the development of the open-space concept was discussed by Spodek (1970) and Staples (1970). Both articles cited the origins of the open-space school as the British Infant Schools with their maximum utilization of building space in providing learning areas for students to work in and move to and from. Furthermore, the teacher was seldom a lecturer but more of a learning facilitator as she moved from group to group guiding children to learn in their individual ways. Both articles emphasized the focus of the open-space school to be the student rather than the teacher. The students took an active role in their education by participating in learning at various interest centers they chose to go to within the building. Both articles expressed concern that the successful development of open-space schools was not assured by a unique building design but also included the adoption by teachers of the student-centered instructional philosophy of the school.

Eberle's (1969) article first discussed the philosophical foundation of the open-space school then contrasted it with a traditionally designed school. He related that two conditions, individuality and flexibility, were the basic components of the open-space school philosophy. Individuality was described in terms of a student-centered instructional approach and flexibility was described in terms of changing sizes of student instructional groups, multiple instructional approaches and routes, and versatile changes and directions in instructional content. A detailed account of Eberle's contrast between the open-space and traditionally designed school can be found in Chapter III. Eberle described the qualities needed to teach in an open-space school as: risk taker, able to accept uncertainty, curious and creative, energetic and willing to attempt the difficult.

The major emphasis of Crews' (1967) article was the building design reflecting the educational philosophy of the program being conducted inside. Crews concentrated on the space provided by the lack of interior walls reflecting the use of flexibility in grouping and individualized instruction.

Opinions from principals and teachers about the open-space school were found in articles by Killaugh (1970) and Dunbar (1970). In an open-school the principal was concerned with such things as being the facilitator of a role change for school personnel. This would involve the teachers moving from an imparter of knowledge to a learning coordinator. Teachers were seen as more a diagnostician of student needs. They are organized into teams and as such must be able to work together. The principal saw students as assuming partial responsibility for some of their own learning. Also, the principal had to allow his teams to

make decisions and be expected to support them. Teachers reacted to the open-space school by noting several positive facets of the program. They could share their talents and experiences with each other as a team; each teacher concentrated her efforts in her area specialty then shares the ideas with the team; teachers are able to work with small groups thus more with the individual student; teachers are able to delegate responsibility to students for some of their own learning; the teaching strengths of each teacher are available to all the students.

Several studies emphasized the need for a particular building design to accommodate the curriculum innovations necessary to move toward a more student-centered instructional program. Anderson and Mitchell (1960, p. 76) pointed to the need of a school building design that would not be obsolete a few years after completion due to educational changes. In addition to large school populations the building would have to be suited for new approaches to school organization that might seem beneficial and new developments in instructional equipment and teaching procedures.

> The majority of the new developments in pupil grouping and in instructional materials have major implications for building design and equipment. Most plans involve varying sizes of class groups, and immediately the conventional school layout is unsuited to such variation. The two extreme grouping possibilities, large class instruction on the one hand and individual or independent study on the other, require uncommon space arrangements and uncommon equipment if there is to be a proper teaching-learning situation.

The authors summarized that the implications of educational change were for greater space flexibility in future school buildings. They cited a recently constructed open-space school as the type of building capable of meeting future educational changes. Coody and Sandefur (1967) also emphasize the necessity for flexibility of building space

if an attempt was made to adapt to changing educational practices. They noted such changes as the team teaching approach, large and small group instruction and individual study that would need flexible building space. They implied the open-space school was the type of design capable of adapting to future technological innovations in education.

The open-space school from an architect's viewpoint was found in articles by Anderson (1970) and Cerny (1964). Cerny (1964) developed the thesis that the function of an educational building determines the shape and nature of the building. For an architect, current trends in teaching, changing educational philosophies, and attitudes of communities and administrators toward rising cost of education must be the base from which building design and materials are developed. Based on such things as the use of electronic teaching devices, flexibility and space in building design must be provided. School building considerations were discussed such as air conditioning, carpeting, amounts of glass, structural supports for roofs, and specific building materials. Anderson (1970) stated that school house planning has been a function of developments in education such as teacher specialization, team-teaching, and flexible instructional grouping. He described a particular school and its design in meeting the above mentioned educational developments. Specific costs of materials were discussed and that the open-space school design was the most functional design to meet the current demands for lower cost and flexible space. Anderson closed his article by noting that the type of educational program itself was the rationalization for the building design; it is not the design that makes the program.

Studies by Ledbetter (1970) and Kleparchuk (1970) focused upon more specific aspects of the open-space school. Ledbetter (1970) sent a 20-item checklist of environmental conditions to students and teachers in four elementary, four junior high schools and two high schools in order to identify the reactions of students and teachers to the school facility they occupied (open-space schools). Nineteen elementary students and teachers, 20 junior high school students and teachers, and ten high school students and teachers responded. The findings indicated that such things as carpet, comfortable atmosphere, and open teaching spaces were liked by the occupants of the selected schools. From the instructional program the occupants liked the teaching methods employing small group and individual student work, the use of audiovisual materials and equipment, and the central location of instructional materials centers. Kleparchuk (1970) investigated the supervisory needs teachers perceived they needed from the principal and compared them with the supervisory needs the principal perceived in order to improve classroom instruction. A questionnaire was given to the principals and grade four, five, and six teachers under their supervision in 17 schools. Top and bottom ranked supervisory needs were very similar for both principals and teachers. The teachers ranked at the top supervisory services that helped maintain good staff relations, maintained a climate conducive to open discussion, and allowed active teacher participation in planning and policy making. The teachers wanted least help in such things as making decisions about their teaching, developing the school's curricular objectives, and arranging for lay participation in developing programs.

Studies reviewed on the open-space school presented information on the philosophy of the open-space school, principals' and teachers' perceptions of the open-space school, various plant designs to house new educational developments, and architects' viewpoints on open-space school design and influence of educational developments on building design. Two studies were cited on more specific aspects of the open-space school such as what teachers and students liked about the environmental and instructional aspects and perceived supervisory needs of teachers and principals. There appeared to be a need for more information on the students' perceptions of the open-space school. What are the students' attitudes toward school after they have experienced the open-space school for a year?

Attitudes Toward School

The majority of students presented in this section reflected a difference in viewpoints on whether attitudes toward school should be dealt with as a global score (unidimensional) or a set of specific components (multidimensional). The outcome of viewing attitudes toward school as unidimensional or multidimensional seemed to be whether or not attitudes toward school correlated significantly with other variables such as achievement. Generally, studies that used unidimensional school attitude scores found no significant relationship with achievement while studies that used multidimensional components of attitudes toward school found that some of the specific components were significantly related to achievement.

Most of the studies in this section used the Student Opinion Poll as the measure of attitudes toward school. The findings of these

studies on the relationship between attitudes toward school and achievement will be presented in this section and briefly mentioned in the next section along with findings on the relationship of attitudes toward school with socioeconomic status, sex membership, and achievement.

The reader should be cautious in generalizing the findings of these studies for several reasons: some studies used different measures of attitudes toward school; some studies used single scores representing attitudes toward school while others used multiple scores; some studies related attitude scores of extreme groups (very dissatisfied and very satisfied) of their sample while others used scores from their entire sample, including the middle group; some studies involved young students, sixth- and seventh-grade, while others studied high school students; few of the studies used the same measures of achievement.

The following studies represented attitudes toward school as a single global score measured by the Student Opinion Poll, or a revision of the Poll. They reported no significant relationship between attitudes toward school and achievement.

Jackson and Getzels (1959) developed the original Student Opinion Poll which was designed to measure general satisfaction or dissatisfaction with various aspects of school (the teachers, the curriculum, the student body, the classroom procedures). They were interested in the differences in psychological functioning and classroom effectiveness between two groups of adolescents -- those satisfied and dissatisfied with their recent school experiences. Two groups of adolescents were selected from a private Midwestern school after scoring one and a half standard deviations above and below the mean of the entire student body.

The number of students in each group was 45 and 47, respectively. The two groups were compared on the following variables: individual intelligence tests (Binet), standardized verbal achievement test (Cooperative Reading Test), standardized numerical achievement tests (five different tests for five different groups), California Personality Test, Direct and Indirect Sentence Completion Test, Group Rorschhach, Teacher ratings, Adjective Checklist. The results reported no significant differences between the two groups in either general intellectual ability or in scholastic achievement. There was a "better" score achieved by the satisfied group on test variables signifying a more adequate level of psychological functioning than the dissatisfied group.

After revising the Student Opinion Poll, Jackson and Lahaderne (1967) administered it and the Michigan Student Questionnaire to measure 292 sixth-graders' attitudes toward their schools. These results were correlated with two measures of scholastic performance, classroom grades and three scores from the Stanford Achievement Test (reading, language arts, and arithmetic). No significant relationships were found between attitudes toward school and scholastic achievement.

Diedrich and Jackson (1969) administered the Student Opinion Poll to a sample of 258 high school juniors. The results were correlated with measures of academic success, intellectual ability, social class, and personal values. There was no significant relation between attitudes toward school and achievement as measured by standardized tests and teachers' grades.

Lahaderne (1968) administered the revised Student Opinion Poll and the Michigan Student Questionnaire to four sixth-grade classrooms to

measure the students' attitudes toward school. In addition to being interested in the relationship between measures of attention and scores on achievement and intelligence tests, she reported low correlations between students' attitudes and their scores on the achievement tests (Scott-Foresman Basic Reading Test and the Stanford Achievement Tests) and I. Q. test (Kulhmann-Anderson Intelligence Test).

Brodie (1964) raised a question concerning the generalization of the findings in Jackson and Getzels (1959) study. In addition to coming from a private school, the sample was above average socioeconomically and intellectually (the mean Binet I. Q. was approximately 130). Brodie administered the Student Opinion Poll to all eleventh grades (N-505) in a public urban high school that represented a broad socioeconomic diversity with middle-class characteristics predominating. Two extreme groups, satisfied and dissatisfied in attitudes toward school, were identified by scores on the Poll one and a half standard deviations above and below the entire group mean score. Brodie used the Iowa Test of Educational Development (ITED) to measure scholastic achievement. The findings reported that the satisfied group scored higher than the dissatisfied group on each achievement test. In addition to a difference in the nature of the sample, the achievement tests in the two studies differed. Brodie noted that he used a test of academic skill development because it was more related to classroom objectives and drill routine rather than a test involved with acquisition of general knowledge which was more a product of independent reading and observation.

Several investigators believed that a more definitive test could be developed if scores on the Student Opinion Poll were viewed as

representing more than just one general attitude toward school as had previous studies. In order to view attitudes toward school as composed of specific components, Auria and Frankiewicz (1967) and Cullen (1969) factor analyzed responses to the Student Opinion Poll and reported factors representing specific components of attitudes toward school.

Auria and Frankiewicz (1967) factor analyzed the responses to the Student Opinion Poll made by the group of adolescents comprising the original sample in the Auria and Chapline (1967) study. The sample included 300 randomly selected ninth- and tenth-graders in a Long Island suburban high school. Seven factors were derived and described as follows: school organization, school attention to individual differences, school concern for social development, academic content and standards, degree of study autonomy, student satisfaction with teachers, and student concern for the breadth of intellectual preparation being provided. The writers did not compute relationships between the seven factors and other variables such as achievement. Cullen (1969) administered the Junior High School Opinion Poll to a group of 372 eighth-grade students at one junior high school. Four factors derived from the factor analysis of the responses were correlated with school marks, standardized achievement and ability test scores, specific cognitive ability test scores (structure-of-intellect tests measuring convergent production, divergent production, cognition and memory), self-attitudes (semantic differential type self-rating scales were designed), sex, race, and socioeconomic status. The four factors were described as teacher, teacher-student, student-peer, subject matter difficulty, and subject matter interest. The only variables that at least one factor

did not correlate significantly with were sex and one structure-of-intellect test (divergent production of symbolic and semantic units). One of the conclusions drawn by Cullen was that school satisfaction was multidimensional rather than unidimensional.

The studies cited above reflect a difference in viewpoints on whether attitudes toward school should be dealt with as a global score (unidimensional) or a set of specific components (multidimensional). Further investigation into this facet of school attitudes was indicated. Therefore, when the question of what are the students' attitudes toward school was considered, a factor analysis of the responses was employed in order to yield more specific attitudinal information.

Socioeconomic Status, Sex Membership, and Achievement

The results of some studies on the relationship between attitudes toward school and achievement have already been noted in the section above (Jackson and Getzels, 1959, Jackson and Lahaderne, 1967, Diedrich and Jackson, 1969, Lahaderne, 1968, Brodie, 1964, and Cullen, 1969). Some studies reported no significant relationship between attitudes toward school and achievement, while others found a significant relationship. The reasons for the differences in findings are many and some of those reasons were noted in the introduction to the preceding section. Conflicting results as to the relationship between attitudes toward school, socioeconomic status, and sex membership also exist. With regard to these variables, results from studies already cited in the previous section were only mentioned briefly in this section. Other

studies of attitudes toward school and relationships between sex membership, socioeconomic status, and achievement are presented in more detail. The reader should note that most of the studies cited in the preceding section used the Student Opinion Poll to measure attitudes toward school while some studies noted in this section use a different measure of attitudes toward school.

From the preceding section, studies by Jackson and Lahaderne (1967) and Cullen (1969) reported no significant relationships between attitudes toward school and sex membership while Jackson and Getzels (1959) and Brodie (1964) found a significant relationship between attitudes toward school and sex membership. Cullen (1969) noted that the factors teacher, teacher-student, and subject matter difficulty but not student-peer, nor subject matter interest were significantly correlated with socioeconomic status.

Finley's study (1968) investigated attitudes toward school and their relationship to socioeconomic status, activities and aspirations, and selected characteristics of the schools (school size and teacher morale). The Student Opinion Poll measured attitudes toward school and was not significantly related to socioeconomic status as measured by Hollingshead's Two-Factor Index of Social Position. He reported that girls expressed significantly higher satisfaction scores than did boys. The sample included 2,190 students enrolled in four high schools.

Attitudes toward school was measured by an inventory called Describe Your School in a study by Fredman (1968). He was interested in studying this attitude scale and its relationship to other variables. The sample included 699 students from ages six through eleven classified as to three socioeconomic groups. Attitude scores correlated

significantly with measures of achievement (Stanford Achievement Test) and there were significant differences between boys' and girls' attitude scores. Findings between socioeconomic levels and attitude scores noted that middle socioeconomic index pupils responded more frequently than low or high socioeconomic index pupils on items that had content related to fear to ask questions or for help and lack of praise for good work. The low socioeconomic index pupils responded more frequently than middle or high socioeconomic index pupils on items that had content related to scolding, punishment, and general unhappiness.

In the study by Godbold (1968), attitudes toward school were measured by a modified form of Stern's Need-Press Indexes. He was investigating eighth-grade students' attitudes toward school, self-perception, and achievement from two junior high schools in communities of different levels of economic affluence. There were no significant differences in the students' attitudes toward school from schools in two communities of different socioeconomic levels. One of the conclusions was that students' socioeconomic level does not necessarily influence their attitude toward school.

Micali (1965) investigated sixth-grade students' attitudes toward selected classroom and school practices. A specially constructed Classroom Practices and Procedures inventory was administered to 216 sixth-graders from a New Jersey public school. The inventory was factor analyzed and the eight factors were interpreted as: (1) an interest in, and liking for, school; (2) ability-intelligence and achievement; (3) the desirable teacher; (4) liking for school is contingent upon teacher approval; (5) helpful approach to teaching with respect for the individual child; (6) teachers unresponsive to children's suggestions; (7)

teachers who encourage performance are satisfactory; (8) boredom or rebellion. One of the implications drawn from the study was that the students' attitudes toward class and school were not found to be a function of ability level, sex, father's educational background or academic achievement.

The difference among the findings of these studies on the relationship between attitudes toward school, socioeconomic status, sex membership, and achievement indicated the need for further investigation and consideration of these variables and their relationship to attitudes toward school.

Type of Teacher Influence
(Direct or Indirect)

Simon and Boyer (1968) presented summary descriptions of various classroom observation instruments. They classified these instruments into two major areas: the affective domain -- those instruments that measure predominantly the emotional climate of the classroom by coding how the teacher reacts to feelings, ideas, or actions of the pupil; and the cognitive systems -- those instruments that consist of categories which differentiate between different kinds of teacher information, teacher questions, or pupil responses. The observation instrument used in the present study, Flanders' Interaction Analysis (FIA), would be classifed as measuring the affective domain in a classroom. Only studies using FIA as a measure of verbal interaction were reviewed. Simon and Boyer (1968, p. 18) had the following to say about instruments that measured the affective domain:

> The findings have indicated that those teachers who have more 'positive' scores, as measured by the affective systems, seem to have students with better attitudes and higher cognitive achievement. . . . in general, positive student gains are related to the more indirect and responsive teaching system.

One might wonder why measurements of the affective domain are related to students' better attitudes and academic achievement. This is understandable in view of the findings of studies on the use of teacher attention as a positive reinforcer in the classroom. The majority of studies using FIA reported findings in agreement with those cited by Simon and Boyer in the above quote.

In a study by Flanders (1967) on teacher influence, pupils' attitudes toward school, and achievement results indicated that achievement and pupil attitudes were significantly higher in the most indirect classes. Sixteen teachers selected from a population of seventh-grade combined English-social studies classes and 16 eighth-grade mathematics teachers were selected for the study. A wide variety of instructional materials were provided for a two-week unit of study to be scheduled by the teachers in one of their regular public school classes. Carefully prepared achievement tests were administered before and after each unit so that adjustments for initial ability could be made. An attitude inventory used in an earlier study was administered. Student attitudes were measured by five scales: (1) teacher attractiveness -- liking the teacher; (2) rewards and punishment -- feeling that rewards and punishments were administered fairly; (3) independence -- feeling free to make some important decisions and to direct oneself while at work; (4) disabling anxiety -- certain paranoid reactions to the teacher's authority; and (5) motivation -- finding school work interesting. Utilizing the revised I/D ratio teachers in each subject area were classified as most

indirect, average, and most direct by analyzing observations of six one-hour periods in the mathematics classes and six two-hour periods in combined English-social studies classes. The results in terms of achievement compared seven indirect versus nine direct mathematics teachers and between eight indirect versus eight direct social studies teachers and indicated superior achievement for the indirect classes beyond a 0.01 level of significance. The attitude scores of all classes showed significantly higher scores ($p < 0.01$ for the indirect patterns of teaching compared with the direct patterns.

In summary, the most favorable attitudes toward school and higher achievement were found to be associated with the most indirect patterns of teacher influence.

Flanders (1970), cited seven studies he had conducted over the years 1965 to 1967 and their findings pertaining to relationships between interaction analysis variables and some learning outcome such as adjusted achievement or positive attitudes toward school of the pupils. These studies covered grades two, four, six, seven and eight and used generally the following procedures: an inventory assessing positive pupil attitudes toward school was administered to a sample of classrooms, average scores on the inventory were calculated for each class and the classes located at the extremes of the score distribution were selected for observation (extreme scores were selected to increase the range on interaction patterns), the classes selected were observed by trained observers. Flanders summarized the results of the projects indicating a relationship between teachers and pupils who seem to learn more and to develop more positive attitudes toward the teacher and learning activities.

A study of the development of vocabulary and reading skills in elementary pupils, in relation to the climate and control existing in the classroom was completed by Soar (1967). The Vocabulary and Reading subtests of the Iowa Tests of Basic Skills were administered in the fall and spring in 56 elementary classrooms, grades three through six. During the year observations were made in the classrooms and four classrooms representing the extremes of climate and control were selected for study from each grade level. Students' growth scores from fall to spring were statistically adjusted as a function of each child's ability level, then differences in rates of growth from classroom to classroom as a function of emotional climate and control were tested. The findings indicated that indirect teaching produced greater growth in vocabulary and reading than direct.

One of the main purposes of a study by LaShier and Westmeyer (1967) was to determine the relationship between certain aspects of the verbal behavior of student teachers and the achievement and attitudes toward school of eighth-grade students participating in a Biological Science Curriculum Study (BSCS laboratory block entitled Animal Behavior). Ten student teachers taught the BSCS block to 239 eighth-grade students over a period of six weeks. An achievement instrument on the material covered in the course was given as a pre- and post-test to measure achievement gain. Further information about the students was gathered from test results on the California Achievement Tests in Reading and the California Mental Maturity Test. The Michigan Student Questionnaire was given to assess the students' attitudes toward their student teachers. The student teachers were observed once a week by one of three trained

observers. The findings indicated that significantly higher attitude and achievement scores occurred in classes conducted by the more indirect student teachers.

From the findings of the studies cited above, the use of interaction analysis to describe teachers as more direct or indirect as it related to students' attitudes toward school appeared to be important.

Chapter Summary

This review of the literature has led to the following research questions investigated by the present study:

1. What are the students' attitudes toward school? This question was formulated from the need of more specific information from the students' viewpoint concerning their moving from a traditionally designed school to an open-space school. In addition, the question of whether to deal with attitudes toward school as unidimensional or multidimensional needed further investigation.

The following three research questions were asked on the basis of inconsistent findings in the literature on their relationship with attitudes toward school.

2. Are there relationships between the students' attitudes toward school and their socioeconomic status?

3. Are there relationships between sex membership and attitudes toward school?

4. Are there relationships between the students' attitudes toward school and academic achievement?

The fifth research question was asked because of the importance of gathering data on what actually occurs in the classroom and on the

reported relationship between the type of teachers' verbal interaction in the classroom and students' attitudes toward school.

5. Based on Flanders' interaction analysis of teachers' verbal behaviors with students, do teachers exhibit more "direct" or "indirect" verbal interaction in the classroom?

The following chapter presents a description of the sample for the present study. The procedures and instruments used in gathering the data are also described.

CHAPTER III

METHOD AND PROCEDURE

Introduction

The major objective of this study was the description of students' attitudes toward school from an open-space school and a traditionally designed school. This chapter contains a description of the subjects included in the study, the procedures used in data collection, a description of an open-space and traditionally designed school, the instruments utilized, and the statistical treatment of the data.

Sample

The sample in this study came from a public school system in a middle-sized community (1970 census approximately 33,000) in central Oklahoma. Sixth-grade students from a new open-space school and sixth-grade students from one of the five other elementary schools were evaluated. The loss of 11 subjects due to lack of achievement test scores and/or attitude scale scores left 141 students in the sample of which 77 were males and 64 were females. The student population of the open-space school differed from the other elementary schools in that a certain number of students across the city who had applied for admission to the open-space school were bused to the school in addition to those living nearby, while the other elementary schools were considered to be

predominantly neighborhood schools. The traditionally designed school included in this study was selected by the superintendent.

Procedures

Interviews were held with sixth-grade teachers and principals of both schools to explain the study and request their cooperation. Dates for administration of the attitude scale to the sixth-grade students and collection of the verbal-interaction data was established. The open-space school had six teachers working with the fifth- and sixth-grade students. Since only one observer collected audio tapes of teacher-pupil verbal interaction and could not record data from all six teachers because of a time variable (these data were collected in April and early May allowing as much of the school year as possible to elapse for maximum exposure of the students to the new school), a random selection of three teachers was made to represent the six teachers when the verbal interaction data was collected. Three teachers taught mathematics in the morning and three teachers taught language arts (social studies, literature, grammar, science, history) the rest of the day. One teacher was randomly selected from the three mathematics teachers and two teachers were randomly selected from the three language arts teachers by placing the names of the teachers from the first group in a hat and having the group leader draw one name from the first group, then two names from the second group. There were two sixth-grade teachers at the traditionally designed school, therefore, both were included in the study.

In April, 1971, all sixth-grade students in the open-space school were assembled as a group. The fifth-grade students were separated from

this group for the purpose of evaluating only the sixth-grade students. The group leader for the fifth- and sixth-grade teachers introduced the investigator to the students and told them a study was being conducted in which their participation and cooperation were requested. Each student was given a form requesting pertinent data for the Two-Factor Index along with the Sixth-Grade Student Opinion Poll questionnaire and answer sheet. The students were read instructions to filling out the Two-Factor Index form and the Sixth-Grade Student Opinion Poll. Each question and potential response to the question of the Poll was also read to the students. A graduate student assisted the investigator in distributing the necessary forms, answering the students' questions about completing the forms, and collecting the forms upon completion. The teachers' instructional schedules were followed as a guide for recording teacher-pupil verbal interaction in several different subject areas at different hours of the day over a period of three weeks. Each of the three selected teachers was observed and data recorded at least three different times. Each recording session averaged a minimum of four minutes for one teacher to a maximum of ten minutes for another teacher. The investigator arrived at the school with a small audio-cassette recorder, sat in the immediate area of the group observed and recorded the group verbal interaction. No data were gathered the first two times the investigator was with each group but served the purpose of acclimating the teachers and students to having an observer in the room. At times the investigator came to the school to record but found students working on small group projects, reading silently, or watching a film, therefore, was unable to collect any data during that time period.

The sequence of data collection in the traditionally designed school was somewhat different from the open-space school. Teacher-pupil verbal interaction data was collected in each classroom prior to the administration of the Sixth-Grade Student Opinion Poll. Each of the two teachers was observed and data recorded on four different occasions. Each recorded session averaged a minimum of five minutes to a maximum of seven minutes. The procedure for recording the group interaction was the same as for the open-space school. The information for the Two-Factor Index and the Sixth-Grade Student Opinion Poll was collected in the same manner as the open-space school but from each class separately. The Poll was administered to each class in the morning of the same day.

The Stanford Achievement Test scores for all sixth-grade students at both schools were secured from the school records. The achievement test had been administered by school officials in September, 1971.

Analysis of the recorded teacher-pupil verbal interaction was completed in the recommended manner as described by Amidon and Flanders (1967). A graduate student in Educational Psychology was trained by the investigator in Flanders' interaction analysis by memorizing and discussing the ten categories, categorizing for approximately 12 hours tapes of other groups recorded by the investigator, then along with the investigator listening and categorizing the tape recordings from the two schools. Upon completion of the interaction analysis of the audio tape recordings by the trained observer and the investigator, reliability was computed for both schools using Scott's coefficient (Flanders, 1967). These results are reported in the section describing Flanders' Interaction Analysis.

At this point a brief description of an open-space school and a traditionally-designed school may assist the reader in distinguishing between the two schools. Within the next few pages, the two types of schools are contrasted predominantly on instructional philosophies and programs. Floor plans are also presented.

In suggesting that there are basic differences, one could argue that many of the aspects noted as unique to the open-space school could be found in a traditionally-designed school. The smallest difference between the two types of schools might be the structural aspects of the building (the open-space school having no interior walls; the traditionally-designed school having each group of students in one room with interior walls separating them from the other classes) whereas the greatest difference might be the philosophical foundations of the instructional program (the open-space school stressing individual differences and pupil-centered instruction; the traditionally-designed school emphasizing students listening to the teacher and expecting to comply in their thinking). For purposes of contrast the assumption is made that the traditionally-designed school does not possess the philosophical foundations attributed to the open-space school.

Eberle (1969) cited individuality and flexibility as the major philosophical foundations stressed by the open-space school. The term individuality refers to the emphasis placed on discovering the ways each individual learns best in addition to stimulating individual initiative and self-direction in the learning environment. The term flexibility refers to the mobility of the internal structure (furniture, size of groups, etc.) to change in order to accommodate a variety of curriculum

innovations and instructional strategies. Eberle (1969, p. 26) further discussed the open-space school program as follows:

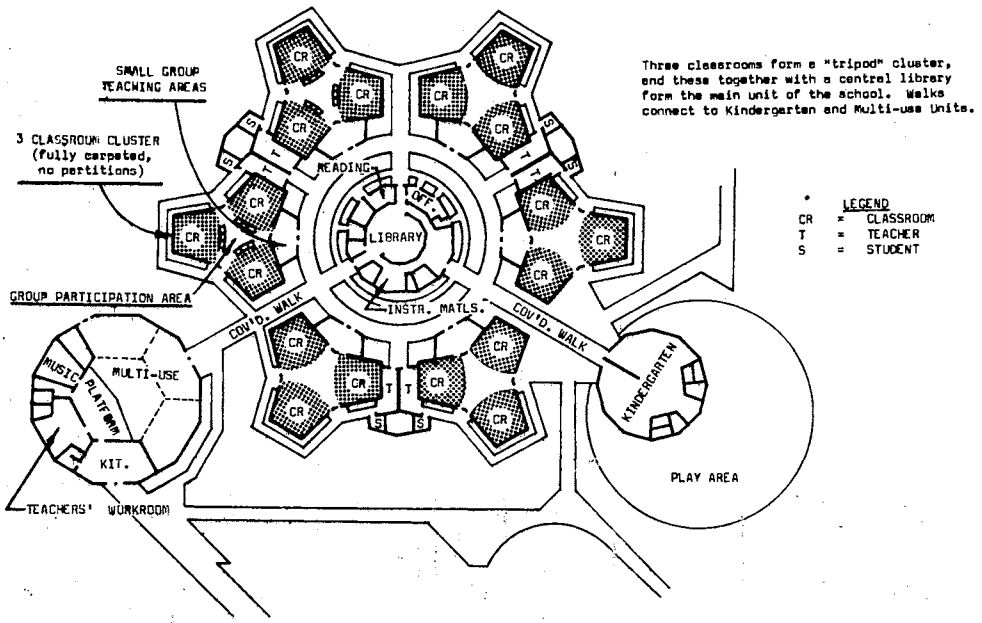
> Change for improved learning opportunities evolve around pupils and the planning of programs to meet their individual needs. The implementation of such programs can best be accomplished in a flexible environment which can be shaped to enhance the particular program being introduced. Open spaces serve to facilitate the introduction of such programs as: flexible-modular scheduling, individually prescribed instruction, individually guided instruction, programmed learning, contract learning, small group-large group instruction, inquiry training, problem-solving instruction, team teaching, and non-graded approaches to instruction.

Eberle suggested that maximum flexibility may be faciltiated when the interior furnishings of a building are mobile as those in an open-space school.

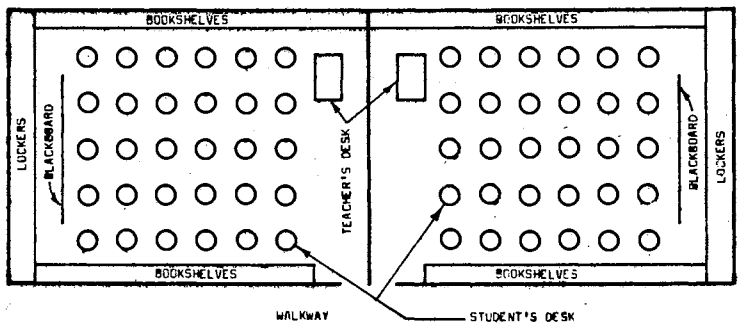
Further clarification of the differences between an open-space school and a traditionally-designed school are illustrated in Figure 1 by the presentation of floor plans representing each type.

The floor plan of the open-space school may need some clarification. The floor plan in Figure 1 and following description appeared in the American School and University Journal (1965, p. 30):

> A more detailed investigation shows that the school is built around a circular instructional materials center which contains bookshelves, reading room, administrative offices, and student services center. The center is thus located equidistant from all of the classroom clusters and is reached by a covered circular corridor which rings it.
>
> The instructional materials center is surrounded by a ring of six clusters of classroom structures -- each called a 'tri-foil teaching space'. These open classroom clusters consist of three teaching stations shaped so that each has three walls and opens on the fourth side to a common participation area in the center. Clusters are paired, with storage ane mechanical space and washrooms between each two.
>
> The main entrance to each cluster is through a foyer which doubles as a teacher workroom and small group room for art, science, and other special activities. The foyer contains a sink and storage units can be divided down the middle by a curtain, forming two separate areas.



MINER ELEMENTARY SCHOOL, SAN JOSE, CALIFORNIA
(AN OPEN SPACE SCHOOL)



TWO TRADITIONALLY DESIGNED CLASSROOMS

Figure 1. Floor Plans Representing an Open-Space School and a Traditionally Designed Classroom

Using Eberle's criteria of flexibility a contrast between an open-space and a traditionally-designed school may be summarized as follows;

Open-Space School	Traditionally-Designed School
1. Provides different instructional approaches and learning aids.	1. Has one major instructional approach.
2. Provides many different learning avenues in order to best suit the individual.	2. Emphasis on information being transferred from teacher to student through one major learning avenue.
3. Can accommodate changes in environmental categories (move furniture, construct different environments).	3. Only one major environment centered on the individual at his desk and the teacher at the front of the classroom.
4. Pupils can pursue supplementary routes to learning (individual and group projects, self-exploration).	4. Usually one or two supplementary projects related to a lesson upon which everyone works.

Instrumentation

Sixth-Grade Student Opinion Poll

The Sixth-Grade Student Opinion Poll (SOP) is a measure of student attitudes toward school. This 51 item group-administered multiple-choice test is an adaptation of the Junior High Student Opinion Poll by the Bureau of Educational Research, Kent State University, for use at the elementary school level. It is recommended that the Sixth-Grade SOP, which takes approximately 45 minutes to administer, be read aloud to the students. A copy of the Sixth-Grade SOP with instructions for administration is withheld by request of Kent State University. Copies of the instrument and permission for use may be obtained by writing Bureau of Educational Research, Kent State University, Kent, Ohio. Information pertaining to the validity and reliability of the Sixth-

Grade SOP was not available from Kent State University due to the current experimental nature of the instrument.

Related information concerning the reliability of the Sixth-Grade SOP was presented. The Sixth-Grade SOP was a revision of the Junior High SOP. Cullen (1969) identified four components of school satisfaction among eighth-grade students through factor analysis of the Junior High SOP. It was concluded among other things that school satisfaction was multidimensional and was best represented by specific referents (teachers, peers, subject matter difficulty, and subject matter interest) rather than unidimensional represented by a single global score. The following reliability coefficients (Kuder-Richardson formula 20) of the Junior High SOP were reported:

Subscale	Reliability Coefficients
A. Teacher, Teacher-Student	.799
B. Student-Peer	.586
C. Subject Matter Difficulty	.596
D. Subject Matter Interest	.656
49 item total	.682

The Junior High SOP was developed from a factor analytic study by Auria and Frankiewiez (1967) of a 60-item student opinion poll administered to 330 ninth- and tenth-grade students in a study completed by Auria and Chapline (1967). Cullen (1969) indicated that new items were added to existing items loading on one of seven factors for the creation of the Junior High SOP. Auria and Chapline (1967) reported a reliability coefficient (Kuder-Richardson formula 21) of .91 for the SOP.

Other studies using similar opinion polls have reported reliability coefficients in agreement with Cullen (1969) and Auria and Chapline (1967). Lahaderne (1968) devised a 45-item multiple-choice test (Student Opinion Poll II) from an original 60-item test (Jackson and Getzels, 1969). She administered the SOP II in four sixth-grade classrooms (N=125), then five months later readministered the test to 63 pupils. The reliability coefficient (Kuder-Richardson formula 20) was .89 for the boys and .85 for the girls. Furthermore, Lahaderne (1968) reported a test reliability of .86 in a previous study involving 293 sixth-graders.

Related information concerning the validity of the Sixth-Grade SOP was presented. Cullen (1969, p. 115) stated in reference to the Junior High SOP that:

> . . . the relationship of the subtests of the SOP with achievement, abilities, and personality gave validity to the SOP as an attitude instrument which provides accurate information about student perception of various aspects of school and thus could be used to evaluate selected aspects of school. (p. 115)

Lahaderne (1968) in the above mentioned study also administered the Michigan Student Questionnaire to the same group of sixth-grade students. With the Michigan Student Questionnaire students' attitudes toward their present teacher and school work were assessed by having 37 descriptive statements about these two areas rated as one of the following: strongly disagree, disagree, agree, and strongly agree. It was reported that the SOP II and the Michigan Student Questionnaire correlated significantly with each other ($r = .63$; $p < .001$).

Two-Factor Index of Social Position

The Two-Factor Index utilized the occupation and education of the head of the household to determine social position. Occupations and levels of education are assigned scale positions (1-7). Based on information about the head of the household, the person receives an occupational and educational scale position. These two positions are multiplied by their factor weights (statistically determined, Education = 4, Occupation = 7), then added together to yield a total score falling into one of five social classes (Hollingshead and Redlich, 1958, pp. 235-237).

The occupational scale is divided into the following seven positions:

1. Executives and proprietors of large concerns and major professionals.
2. Managers and proprietors or medium concerns and minor professionals.
3. Administrative personnel of large concerns, owners of small independent businesses, and semiprofessional.
4. Owners of little businesses, clerical and sales workers, and technicians.
5. Skilled workers.
6. Semiskilled workers.
7. Unskilled workers.

The assumption of the occupational scale is that different occupations are valued differently by society and different occupations imply the use of degrees of control by some men over the occupational pursuits of others.

The assumption underlying the educational scale is that individuals having similar educations will tend to have similar tastes, attitudes,

and behavior patterns. The education scale is divided into the following seven positions:

1. Graduate professional training - persons who completed a recognized course which led to the receipt of a graduate degree.

2. Standard college or university graduation - individuals who had completed a four-year college or university course leading to a recognized college degree.

3. Partial college training - individuals who had completed at least one year but not a full college course.

4. High school graduation - all secondary school graduates, whether from a private preparatory school, public high school, trade school, or parochial high school.

5. Partial high school - individuals who had completed the tenth or eleventh grades but not the high school course.

6. Junior high school - individuals who had completed the seventh, eighth, or ninth grades.

7. Less than seven years of school - individuals who had completed less than seven grades irrespective of the amount of education received.

The computation of the Index of Social Position score for an individual or family unit involves the following: locate the scale value for occupatoin of the head of the household and multiply by the occupation factor weight; locate the scale value for the educational level of the head of the household and multiply by the education factor weight; sum the two values which equals to the individual's Index of Social Position score. For example, Irving Rosenkranz is a professor of ethnology at the university. His Index of Social Position score is computed as follows:

Factor	Scale Value	Factor Weight	Score x Weight
Occupation	1	7	7
Education	1	4	4
		Index of Social Position score =	11

According to Hollingshead and Redlich (1958, pp. 235-237) scores may be arranged on a continuum or divided into groups of scores. The continuum range of scores is a low of 11 to a high of 77. In predicting the social class position of an individual using groups of scores, the following five classes are suggested:

Range of Computed Scores	Social Class
11 - 17	I
18 - 27	II
28 - 43	III
44 - 60	IV
61 - 77	V

A continuum range of scores was used in the current study as a measure of social class position.

With regard to the predictive validity of using occupation and education of the head of the household to estimate social class position, Hollingshead (1958, p. 388) discussed a study in which interview data from a cross section random sample of 522 New Haven families was analyzed by two sociologists who made independent judgments as to which of five social class levels each family belonged to in the community. The results showed a 96 percent agreement between the two sociologists who then discussed the criteria each used to guide their decisions. They agreed that three variables (address, occupation, and years of school completed by the family's head) were given the greatest consideration so these variables were intercorrelated with judged class position. These results are summarized below:

A. Intercorrelation of Scale Variables	Correlation
Education with residence	.451
Occupation with residence	.505
Occupation with education	.721

B. Criterion Predicted from One Variable	Correlation
Judged class with residence	.692
Judged class with education	.782
Judged class with occupation	.881

C. Criteria Predicted from Two Variables	Multiple Correlation
Judged class with residence and education	.780
Judged class with residence and occupation	.926
Judged class with education and occupation	.906

When estimating the class position of the families in the sample, the weights for each factor were computed by multiple regression analysis.

According to Hollingshead (1958, p. 394), "when determining class position for a family, an assumption is made that meaningful differences exist between the five social classes." Differences between the five social classes and their social behavior was demonstrated in a factor analytic study (Hollingshead and Redlich, 1958), using mass communication data as a criterion for social behavior.

Flanders' Interaction Analysis

Flanders' Interaction Analysis is a method of classifying the verbal behaviors between teachers and students for the purpose of analyzing the types of interaction and their effects on classroom behavior. An observer in the classroom classifies the verbal behaviors at three-second intervals into one of ten categories:

1. Accepts feeling
2. Praises or encourages
3. Accepts or uses ideas of students
4. Asks questions

5. Lecturing
6. Giving directions
7. Criticizing or justifying authority
8. Student talk-response
9. Student talk-initiation
10. Silence or confusion

For a more detailed description of each of the ten categories see Appendix A.

Each of the ten categories falls into one of three broader areas: (1) teacher talk, (2) student talk, and (3) silence or confusion. The area of teacher talk is divided into two major types of influence, direct and indirect. Indirect influence refers to the teacher's verbal behaviors that encourage student participation in class; direct influence refers to the teacher's verbal behaviors that tend to restrict student participation. Categories one through four constitute the teacher's indirect influence while categories five through ten constitute the teacher's direct influence.

After verbal behaviors have been categorized, the frequency of occurrence of each category is entered into a ten-row by ten-column table to enhance the analysis and interpretation of the classroom verbal behaviors. One type of analysis may determine whether a teacher is predominantly direct or indirect through the use of an I/D ratio which is determined by dividing the total number of tallies in columns one through four by the total number of tallies in columns five through seven. A related method of analyzing the teacher's direct/indirect influence is the revised I/D ratio (categories 1+2+3/6+7). According to Flanders (1967) the elimination of categories four and five in the

revised I/D ratio yields more sensitive data about the teacher's direct or indirect approach to motivation and control in the classroom and allows this statistic to be independent of verbal behaviors such as drill that are unique to specific subject areas.

The revised I/D ratio was incorporated into the present study because of the relationship between indirect teacher's influence and students' attitudes toward school as noted in a study by Flanders. Attitude scores of students with the most indirect teachers (as defined by the revised I/D ratio were significantly higher than those attitude scores of students with the most direct teachers.

In rating teachers as more direct or indirect the use of a trained observer was necessary as was the computation of observer reliability. A description of observer training has already been made (p. 35) in accordance with procedures outlined by Flanders (1967b). Flanders (1967b, p. 161) describes Scott's coefficient as a method unaffected by low frequencies, can be adapted to percent figures, can be estimated more rapidly in the field, and is more sensitive at higher levels of reliability.

> Scott calls his coefficient 'pi' and it is determined by the two formulae below:
>
> $$\pi = \frac{Po - Pe}{1 - Pe}$$
>
> Po is the proportion of agreement, and Pe is the proportion of agreement expected by chance which is found by squaring the proportion of tallies in each category and summing these over all categories.
>
> $$Pe = \sum_{i=1}^{k_P} {}^{2}$$

In formula two there are K categories and P is the proportion of tallies falling into each category. π, in formula one, can be expressed in words as the amount that two observers exceeded chance agreement divided by the amount that perfect agreement exceeds that chance.

The observer reliability computed between the investigator and the trained observer over all categories and all teachers observed in each school was:

School	Scott coefficient
Open-space	.949
Traditionally-designed	.917

According to Flanders (1967, p. 166), "A Scott coefficient of 0.85 or higher is a reasonable level of performance." It has already been mentioned that each of the three selected teachers from the open-space school was observed and data recorded at least three different times. Each recorded session averaged a minimum of four minutes for one teacher to a maximum of ten minutes for another teacher. From the traditionally-designed school, each of the two teachers were observed and data recorded on four different occasions. Each recorded session averaged a minimum of four minutes to a maximum of seven minutes.

In regard to the length of time involved in each observation period, Wells (1970) compared the verbal interaction patterns of three selected teachers based on classroom observational records of 45 and 15 minutes in length. Among several findings reported, there was no significant difference in the interaction sequence patterns displayed by each teacher during a total of three 15-minute samples randomly selected and during a total of six 45-minute samples. Furthermore, Gallaher (1969), in studying how 10, 20, and 30 minutes of observation time affected the measured verbal behavior patterns of teachers, used a

reliable observer to record interaction analysis data on two different days over two 30-minute periods for 30 randomly selected intermediate teachers. He marked the data into ten-minute blocks of time in each of the two observations, then calculated I/D ratios for the first 10 minutes, 20 minutes, and 30 minutes. He concluded that a ten-minute observation significantly predicted the information about teacher directness and indirectness which could be obtained in 20 and/or 30 minutes of observation time. He concluded that school administrators using classroom interaction analysis in assessing teacher behavior need not spend an entire period of 45 minutes in observing, but should combine at least three 15-minute sample periods to gain a more representative picture of the predominant teaching pattern.

In summarizing these two studies with regard to appropriate time parameters for measuring teacher directness and indirectness, there seems to be no loss of information using smaller time parameters if combined over several sample episodes.

Stanford Achievement Test

The Stanford Achievement Test is a standardized group-administered instrument yielding achievement scores in the following areas: word meaning, paragraph meaning, arithmetic computation, arithmetic concepts, arithmetic applications, language, spelling, social studies, and science. For a detailed description of each subtest see Appendix B.

Kuder-Richardson (formula 20) reliability coefficients, odd-even split-half reliability coefficients (Spearman-Brown Prophecy Formula) for a random sample of 1,000 sixth-grade pupils from 76 school systems are presented in Table I (Kelley, et. al., 1964, p. 24).

TABLE I

RELIABILITY COEFFICIENTS FOR GRADE 6 TESTS
IN INTERMEDIATE II BATTERY

Test	Split-half	Kuder-Richardson
Word meaning	.90	.90
Paragraph meaning	.93	.92
Spelling	.93	.92
Language	.95	.93
Arithmetic computation	.89	.87
Arithmetic concepts	.85	.87
Arithmetic application	.89	.89
Social studies	.91	.90
Science	.90	.89

According to the manual, an effort to insure contact validity involved the analysis of course work and textbooks as a foundation for measuring the skills depicted by each of the area subtests (Kelley, et. al., 1964, p. 25).

Restatement of Research Questions

As cited in Chapter I, the major research questions under study in the open-space school were:

1. What were students' attitudes toward school?

2. Were there relationships between the students' attitudes toward school and their socioeconomic status?

3. Were there relationships between sex membership and attitude toward school?

4. Were there relationships between the students' attitudes toward school and academic achievement?

5. Based on Flanders' interaction analysis of teachers' verbal behavior with students, did the teachers exhibit more "direct" or "indirect" verbal interaction in the classroom?

As additional information potentially useful for future research similar data were gathered in a traditionally-designed school with respect to the same five questions.

Statistical Analysis of the Data

To answer question one, responses to the Sixth-Grade Student Opinion Poll were factor analyzed and run on an IBM System 360 Model 65 computer. The computer program, identified as BMDo3M, performed a principal component solution with unity in the diagonals of the correlation matrix and an eigenvalue of one. The factor matrix was orthogonally rotated to simple structure using a varimax criteria. In the utilization of the unit diagonal procedure (using one in the diagonal) rather than the optimal diagonal method (using communalities in the diagonal) Horst (1965, p. 118) notes the following:

> When the factor analysis is performed on the correlation matrix with 1 in the diagonal, the solution has a number of characteristics which distinguish it from those solutions employing optimal diagonal elements. In general, the computations are simpler, the number of factors required for a specific accuracy of approximation are greater, the proportion of the variance of each variable accounted for by all the factors is less than or equal to its total variance, and the total variance accounted for by all factors is a maximum.

Questions two and four were answered by computing point-biserial correlations. According to Guilford (1965), the use of a point-biserial coefficient is appropriate when one of the two variables being correlated is a dichotomy. Guilford further explains that variables such as test item responses scored as either right or wrong are not

fundamentally dichotomous but in practice should be treated as if they were dichotomous. Responses to the Sixth-Grade Student Opinion Poll were scores as +1 or zero. Therefore, in the computer program, point-biserial correlations were automatically computed from Pearson's basic formula in which questions two and four involved the dichotomized data of attitude scores and the continuous data of social position scores and achievement scores, respectively.

Question three was answered by computing a phi coefficient. Guilford (1965) notes that phi is a member of the product-moment correlation family and is applied when the two distributions to be correlated are dichotomous. Question three was concerned with the relationship of school attitudes (dichotomous) and sex membership.

The .05 level of confidence was required for statistical significance.

Question five was answered by computing a revised I/D ratio as described by Flanders (1967a). See page 46 for specific details about the computation of the revised I/D ratio.

Chapter Summary

Chapter III has presented a description of the sample for this study. The procedures used in collecting the data, the test instruments and the statistical methods of data analysis were discussed. Furthermore, an open-space and traditionally designed school were contrasted on the basis of philosophical foundations. Chapter IV will continue by describing the results of the data analysis and the open-space school where the data was gathered.

CHAPTER IV

RESULTS OF STATISTICAL ANALYSES

Introduction

This study involved a description of sixth-grade students' attitudes toward school from an open-space school and a traditionally designed school. In relation to the students' school attitudes subsequent questions were posed regarding socioeconomic status, sex membership, and achievement scores. Another question was asked concerning the type of teacher-pupil verbal interaction within the school. In addition, data were gathered from a traditionally designed school to answer these same questions.

Each of the research questions will be presented with the results of the data analyses. The open-space school where the data were gathered will be described. The description of the open-space school is not intended to be exhaustive but merely to give the reader some information to distinguish it from other schools.

Research Question One

What are the students' attitudes toward school? To answer this question, results of the Sixth-Grade Student Opinion Poll, administered to sixth-grade students attending the open-space and traditionally designed school were factor analyzed.

The data matrix consisted of 141 subjects from both schools answering a questionnaire of 51 items. The mean and standard deviations for the items are presented in Table II. The interim correlation coefficients are presented in Appendix C. The intercorrelation matrix was factored by a principle components extraction program which used unity on the diagonals and an eigenvalue of one. Seventeen factors were derived. The factors were rotated to simple structure using varimax criteria. The results of the factor rotation for the entire sample are listed in Appendix D. The critical value of .165, which corresponds to the .05 level of significance in a chi square table, was used to determine items loading significantly on a factor. Only items loading .165 or greater were listed in Appendix D.

Description of Factors

The interpretation of each factor was based upon the content of the two to four highest loading items. Also included in the following factor descriptions are the stems from two of the higher loading items.

Factor A - The students' interest in subject matter content appears to identify factor A. The content of the items centered on subject matter interest, personal interest in the subject matter and acceptability of the subject matter. Two sample items are:

35. Most of the subjects taught in this school are

34. The things that I am asked to study are of

Factor B - The student's opinion of how others achieve in school would describe factor B. Item content included the student's seriousness about studies, group reactions to an individual's grades and group

TABLE II

MEANS AND STANDARD DEVIATIONS FOR FIFTY-ONE ITEM STUDENT OPINION POLL

Items	Means							
1-8	0.652	0.765	0.695	0.531	0.737	0.794	0.595	0.652
9-16	0.843	0.744	0.326	0.503	0.645	0.546	0.390	0.390
17-24	0.439	0.382	0.574	0.680	0.560	0.815	0.432	0.638
25-32	0.595	0.225	0.638	0.283	0.652	0.432	0.617	0.510
33-40	0.645	0.624	0.524	0.496	0.319	0.368	0.673	0.716
41-48	0.439	0.595	0.553	0.709	0.716	0.680	0.631	0.787
49-51	0.631	0.744	0.553					

Items	Standard Deviations							
1-8	0.477	0.424	0.462	0.500	0.441	0.405	0.492	0.477
9-16	0.364	0.437	0.470	0.501	0.480	0.499	0.489	0.489
17-24	0.498	0.487	0.496	0.467	0.498	0.389	0.497	0.482
25-32	0.492	0.437	0.482	0.452	0.477	0.397	0.487	0.501
33-40	0.880	0.486	0.501	0.501	0.467	0.484	0.470	0.452
41-48	0.498	0.492	0.498	0.455	0.452	0.467	0.484	0.410
49-51	0.484	0.437	0.498					

respect of classmates who excell in sports. One item was highly loaded negatively (-.67). Two sample items are:

23. In general, students in this school take their studies

9. When students in this school get bad grades, their classmates usually

Factor C - The content of the items in this factor describe what teachers do in a classroom. Among the areas represented were the use of competition in a classroom, things the teacher requests students to do, and the usefulness of teacher presented material. Two sample items are:

13. When teachers "go too fast", students do not know what is going on. In this school, most teachers teach

24. In this school teachers seem to teach

Factor D - This factor appears to be weighted with items related to peers' acceptance of each other in a social and academic setting. Items in this group involve students getting along together and the acceptance of good achievers by classmates. Two sample items are:

40. Students from different types of homes and backgrounds get along together in this school

20. Students who receive good grades are

Factor E - This factor seems to be related to peer social interaction. Items cover areas such as meeting new students, accepting new students, and the amount of importance placed by the group on getting along with others. Two sample items are:

47. In my classes the amount of attention given to getting along with other people is

5. The chances to get to know other kids in this school are

Factor F - Items in this factor appear to be related to subject matter difficulty which also involves some type of peer competition.

The content of the items in this group include the ability of other students and subject difficulty. Two samples are:

22. In general the subjects taught are

10. Students in this school are

Factor G - This factor, one of the easiest to identify, had items regarding contact with other school personnel such as the principal, counselor, and teacher aide. Two samples are:

3. In some schools the principal sees and talks with students often, while in other schools he rarely sees them. In this school the principal sees and talks with the students

31. Some schools hire persons in addition to teachers to help students with special problems. This service in this school is

Factor H - Self initiative in the classroom appeared to be the underlying component in this factor. The opportunity to perform self-directed classroom activities and to venture into content areas not assigned by the teacher are characteristic of the item content. Two sample items are:

4. The chance to say or do something in class without being called upon by the teacher is

38. On the whole, the program of things we study in this school

Factor I - The underlying component of this factor appeared to be focused on student and teacher judgment of peer sociability. More specifically, items in this group involved teachers' recognition of students' sense of humor, peers' respect of others who excel in sports, and the estimation of peer interest in social affairs. Two sample items are:

12. The student who shows a sense of humor in class is usually

21. In my opinion, student interest in social affairs, such as clubs, scouts and the "Y" is

Factor J - Items in this factor seemed clustered around the school's acceptance of individual differences. This would include how the teachers and students as well as the curriculum accommodate to individual differences. Two sample items are:

26. The student who acts differently in this school is likely to find that most students

2. The number of courses offered in this school is

Factor K - This factor appeared to be distinctly concerned with a student's feelings toward school. Items included feelings about grades, programs, teachers and feelings toward school in general. Two sample items are:

46. In general I feel the grades I receive in this school are

50. In general, my feelings toward this school are

Factor L - Interest in student social affairs by peers and teachers described the major component of this factor. Item content involved the teacher's interest in student affairs outside of school and in the amount of student interest in social affairs. Two sample items are:

11. The teacher's interest in what the students do outside of school is

21. In my opinion, student interest in social affairs such as clubs, scouts and the "Y" is

Factor M - This factor seemed to be distinctly involved with teacher control of the class. Item content was related to such things as amount of change in the seating arrangements and teacher control over the way things are run in the classroom. Two sample items are:

19. Our seats in class our

30. In some classes the teachers are completely in control and the students have little to say about the way things are run. In other classes the students seem to be boss and the teacher contributes little to the control of the class. In general, teachers in this school seem to take

Factor N - Item content in this factor focused upon student perception of teachers' abilities. Student perception of the teachers' knowledge of subject matter and ability to present new material was covered by the items. Two sample items are:

39. Teachers I have had in this school seem to know their subject matter

43. The ability of the teachers in this school to present new material seems to be

Factor O - Teachers' attention to students' academic needs appeared to describe the major focus of the items in this factor. The emphasis of the teachers' attention in the items was on written assignments, books, and oral presentations. Two sample items are:

8. In this school the teachers' interest in the students' school work is

17. On the whole the school pays attention to the things you learn from books

Factor P - This factor appeared to be predominantly involved with a student's perception of peer concern with social appearance and possibly the teachers' attention to students' social appearance. Two sample items are:

27. In my opinion, students in this school pay attention to their looks and clothes

42. When students need special attention, teachers in this school are

Factor Q - School spirit described the major component of this factor. Several other items related to numbers of courses, new course material, and teaching aids seemed to contribute to school spirit. Two sample items are:

16. The amount of "school spirit" at this school is

28. Teaching aids such as films, radio, and the like are used

Factor Reliabilities

Spearman-Brown split-half reliability coefficients were computed for factors having at least ten items loading significantly on them (Factors D and G were omitted from the original 17-factor solution for this computation). According to Guilford (1965, p. 465):

> It was indicated in connection with the split-half method that the whole test is more reliable than either half and that in general terms there is an increase in reliability with an increase in the length of the test.

Thus, the Spearman-Brown prophecy formula (Guilford, 1965) was utilized to estimate how many tiems the length of a factor (number of items in a factor) would have to be increased to obtain a reliability coefficient of .70. The results of these computations are summarized in Table III. To compute the split-half reliability coefficients, the factor items were first randomly divided into two groups (odd-even) by placing numbers corresponding to the items in a hat and drawing them one at a time alternately placing them in two groups. If an odd number of items existed in a factor, the placement of the last item drawn would alternate between the two groups. The two groups of items were then correlated and the reliability coefficient was calculated for each factor (Bruning and Kintz, 1968). Only Factor J displayed enough internal consistency among items not to need an increase in length to raise the reliability coefficient to .70 or higher.

Stemming from the analysis of the Sixth-Grade Student Opinion Poll came the question: Are there relationships between students' attitudes toward school and which school they attend? To answer this question, the 17 factors from the Sixth-Grade SOP were correlated with the two

TABLE III

SPEARMAN-BROWN SPLIT-HALF RELIABILITY COEFFICIENTS AND RESULTS OF THE SPEARMAN-BROWN PROPHESY FORMULA

Factor*	Correlation Coefficient	Reliability Coefficient	Lengthen Number of Items to Reach Reliability of .70
A	.08	.16	**
B	0	0	**
C	.20	.33	4.7 times
E	0	0	**
F	.05	.09	**
H	.19	.32	4.9 times
I	.20	.33	4.7 times
J	.73	.82	--
K	.01	.01	**
L	.09	.16	**
M	.31	.47	2.6 times
N	0	0	**
O	.16	.27	6 times
P	0	0	**
Q	.31	.47	2.6 times

*Factor D and G omitted (less than ten items loading significantly).

**Too high to consider increasing length in order to obtain .70 reliability coefficient (actually, all factors need new items to increase internal consistence rather than merely lengthening them except factor J).

schools. The open-space school was assigned the number, 1, while the traditionally designed school was assigned the number, 0, for computer analysis. Therefore, negative values mean that students at the open-space school tend to be dissatisfied while students at the traditionally designed school tend to be satisifed. Positive values mean just the opposite. These values are summarized in Table IV. Five factors were significantly related to the variable, school. Factor F (subject matter difficulty) was the only factor which students attending the open-space school appeared to be satisfied with and students attending the traditionally designed school dissatisfied. The reverse situation occurred with the remaining four factors. Students attending the traditionally designed school appeared to be satisfied with Factor B (students' opinion of how others achieve in school), L (interest in student social affairs by peers and teachers), M (teacher control of class), and N (student perception of teachers' abilities) and students attending the open-space school dissatisfied.

Research Question Two

Were there relationships between the students' attitudes toward school and their socioeconomic status? To answer this question, the 17 factors derived from the Sixth-Grade Student Opinion Poll (SOP) were correlated with the students' scores on the Two-Factor Index of Social Position. The results are summarized in Table IV.

Factors B and D were the only two factors to achieve a .05 level of significance with social position. On Factor B (the students' opinion of how others achieve in school), students with lower social position scores appeared to be satisfied on this factor while students with

TABLE IV

THE CORRELATION COEFFICIENTS BETWEEN THE SEVENTEEN SOP FACTORS, SEX MEMBERSHIP, SCORES ON THE TWO FACTOR INDEX, AND THE SCHOOL ATTENDED.

	Factor																
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Social Position Scores	.015	*-.171	-.079	*.258	.155	-.019	.014	.012	.061	.019	.049	-0.16	-.029	-.034	-.017	.001	-.013
Sex Membership	*-.177	.030	*.190	.082	-.074	-.109	-.080	-.047	-.068	.077	-.051	-.073	*-.188	.022	-.112	.154	-.009
School	-.120	*-.170	-.151	.110	.097	*.179	.006	-.133	-.154	-.008	-.051	*-.273	*-.217	*-.179	-.141	.040	-.066

*$p < .05$.

higher social position scores appeared to be dissatisfied. On Factor D (peer acceptance of each other) students with higher social position scores appeared to be satisfied on this factor while students with lower social position scores appeared to be dissatisfied.

Research Question Three

Were there relationships between sex membership and attitudes toward school? To answer this question, the students' sex membership was correlated with the 17 factors derived from the Sixth-Grade Student Opinion Poll. Males were assigned the number, 1, while females were assigned the number, 0, for the computer analysis. Therefore, negative values mean that males tend to be dissatisfied while females tend to be satisfied. Positive values mean just the opposite. The results are summarized in Table IV. On Factor A (students' interest in subject matter content) and M (Teacher control of class), females appeared to be satisfied and males dissatisfied. On Factor C (what teachers do in a classroom) males appeared to be satisfied and females dissatisfied.

Research Question Four

Were there relationships between the students' attitudes toward school and academic achievement? To answer this question, the 17 factors derived from the Sixth-Grade Student Opinion Poll were correlated with the subtests of the Stanford Achievement Test. The results are summarized in Table V. The critical value of .165, which corresponds to the .05 level of significance in a chi square table, was used to determine the .05 level of significance for these correlation

TABLE V

CORRELATION COEFFICIENTS BETWEEN THE STANFORD ACHIEVEMENT SUBTESTS AND THE SIXTH-GRADE STUDENT OPINION POLL

Subtest	Factor																
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Word Meaning	.024	+-.262	*-.200	*.204	.073	-.045	.098	.086	-.039	.053	.161	.039	-.004	-.042	.012	.096	.140
Paragraph Meaning	.067	+-.304	-.134	+.246	-.021	-.033	.150	.070	.005	.029	.096	.077	-.004	-.066	.001	.020	.051
Spelling	.102	+-.254	*-.193	.126	.145	-.117	.099	.050	.003	.041	.118	.164	.023	-.030	-.013	-.012	.107
Language	.098	+-.244	*-.169	+.221	.022	.013	.060	.083	-.055	.055	.140	.149	.064	-.022	.023	-.014	.115
Math Computations	.013	+-.258	*-.196	.093	-.017	.032	.032	*.169	.038	-.029	.035	-.017	.103	-.091	.083	-.040	.073
Math Concepts	.060	-.292	*-.176	+.252	.007	-.041	.056	.132	-.036	.006	.097	.031	-.010	-.019	.090	.040	.097
Math Application	.154	*- 186	*-.165	*.186	.064	-.047	.080	.105	-.029	.031	.092	.074	.059	-.034	.084	.015	.108
Social Studies	.064	-.157	-.104	+.265	.057	.017	.131	-.001	-.032	.057	.117	.053	-.013	-.047	.122	.062	.155
Science	.071	*-.201	- 130	+.285	-.016	.014	.111	.079	-.038	.063	*.192	.074	.016	-.035	.066	.064	.124

* $p < .05$.

+ $p < .01$.

coefficients. Factor B (the students' opinion of how others achieve in school) and factor D (peers' acceptance of each other) seemed to be significantly related to all but two subtests of the achievement test. Factor C (what teachers do in a classroom) appeared to be significantly related to all but three subtests while factor H (self-initiative and factor K (students' feelings toward school) seemed related to only one of the subtests. The remaining factors did not appear to correlate significantly with any of the achievement tests.

Research Question Five

Based on Flanders' interaction analysis of teachers' verbal behavior with students, do the teachers express a more "direct" or "indirect" verbal interaction in the classroom? To answer this question, audio tape recordings of teacher-student verbal interaction from both schools was analyzed and a revised I/D ratio computed for both schools. The revised I/D ratio and its computation has already been presented (Chapter III, p. 46). It is the statistical computation for determining if teachers express a more "direct" or "indirect" verbal interaction in the classroom. Once again, indirect verbal interaction refers to the teacher's verbal behaviors that encourage student participation in class; direct verbal interaction refers to the teacher's verbal behaviors that tend to restrict student participation. A summary of these results is presented in Table VI. The stimulus for including interaction analysis in the current investigation came from the results of a study by Flanders (1967a, p. 228) in which he reported that indirect teacher verbal interaction was related to more positive student attitudes toward school. The Flanders study was discussed in

greater detail in Chapter II (p. 27). The range of the revised I/D ratio that Flanders used to determine what constituted direct and indirect verbal interaction was as follows:

> All of the i/d ratios of the most direct teachers fall within the range of 0.01 to 2.0, with the majority below 0.4. For the most indirect teachers, the range for social studies is 0.01 to 18.0. For mathematics the range is 0.01 to 11.0. The majority of ratios for the most indirect fall above one. The distribution of i/d ratios for the two average groups falls midway between the two extreme groups and is not shown on the ... .

TABLE VI

REVISED I/D RATIOS FOR TEACHERS IN BOTH SCHOOLS

School	Revised I/D Ratio
Open-Space	4.90
Traditionally Designed	2.04

Note: The reader should not interpret the above cited ratios as one being twice as "much" as the other.

The i/d ratio in the above quote was the revised I/D ratio referred to in the current investigation. The revised I/D ratios noted from the Flanders study (1967a) was used as a basis for describing the currently calculated revised I/D ratio. The revised I/D ratios from both schools appeared to fall in the more indirect category cited by Flanders (1967a).

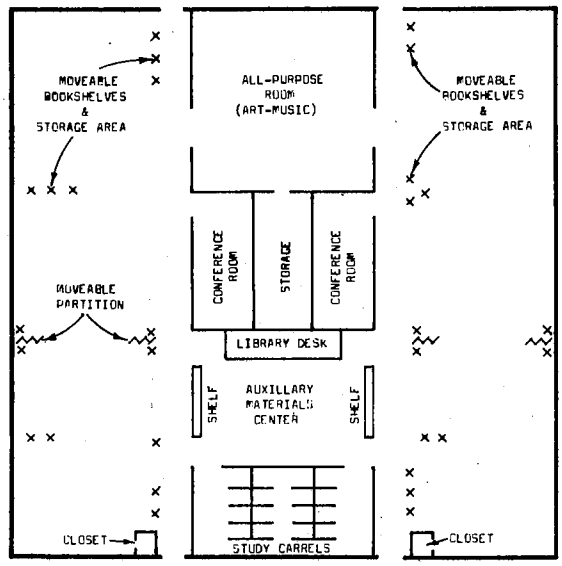
At this point, a more detailed description of the open-space school included in the current investigation may assist the reader in distinguishing between it and other schools. The following description was not designed to be exhaustive but merely to provide additional information for the reader's discrimination. The open-space school will be described under three areas: philosophy, spatial arrangement, and organization and contrasted with a traditionally designed school.

Based on information received from school officials, the philosophy of the open-space (OS) school in the current study was focused upon individual differences both educational and social among students. In an attempt to approach a more individualized instructional program, a wider variety of subject matter and smaller instructional groups were provided. In a traditionally-designed (TD) school the philosophy may be focused more upon the class as a group with teaching directed toward the average student and the progress of the group as a unit. It should be noted that the orientation toward individual differences may be found in a TD school but the OS school has more flexibility to approach the goal of accommodating more individual differences among students.

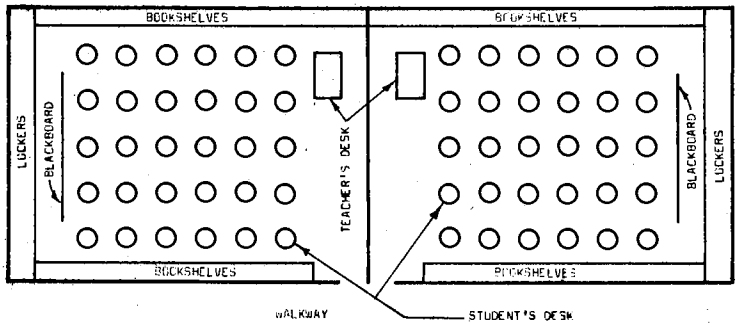
School officials indicated that the spatial arrangement of the OS school was designed to facilitate a team teaching organization with flexible student grouping. By providing large interior spaces with movable partitions instead of fixed walls, the teachers are able to work with very large groups of students or smaller groups as a function of the educational objective of the subject matter and the individual needs of the students. A TD school, with stable walls defining the limit to the size of the group, restricts to some extent the flexibility necessary for maximum student grouping practices. A maximum of 30 students

might be grouped in a TD classroom whereas 100 students might be grouped in the OS classroom. The OS school in the current investigation was divided into six instructional suites, each suite housing approximately 100 students with an additional kindergarten suite housing 50 students. Other areas within the building included an instructional materials center (housing a variety of media equipment) with auxiliary centers in each suite. An instructional materials center director helped coordinate the use of the resources with the entire teaching staff. Each of the auxiliary suite centers contained library books, film strips and loops, and individual study carrels with listening posts. Conference rooms and an all-purpose room were also found in each suite. A floor plan for the upper level team in Figure 2 may clarify the description of the spatial arrangement for the OS school. For comparison, a floor plan for a TD school was also presented. All of the elementary schools in the school system were wired for closed circuit television but the OS school had its own television studio and control room which may have enhanced the involvement of the students in the development, production, and presentation of their own programs. The other elementary schools received programs from a building centrally located in the downtown area. The OS school had the capacity to broadcast to any location in their building or to other elementary schools.

The staff organization of the OS school, as described by school officials, differed from the TD school. The OS school staff was organized into three horizontal teams (primary level students from kindergarten and the first two years of school; intermediate level - third and fourth years of school; and the upper level - fifth and sixth years of school). Each team included seven to eleven teachers,



TWO OPEN SPACE SCHOOL SUITES



TWO TRADITIONALLY DESIGNED CLASSROOMS

Figure 2. Floor Plan for Two of the Open-Space School's Suites and Two Classrooms in a Traditionally Designed School

three teacher aides, and approximately three student teachers. Each team worked with approximately 200 students. Furthermore, each team was responsible for the presentation of curriculum appropriate for the students assigned to them. The vertical team organization consisted of the entire school staff responsible for the scope and sequence of the curriculum for the entire student population. The curriculum development for the TD school was initiated from and disseminated to the elementary schools from the central administrative office. School officials described several other features of the OS school that can be contrasted with a TD school to aid the distinction between the two types of schools:

1. Each team in the OS school was responsible for continual diagnosis of students' academic skill development and if necessary the transfer of students to more appropriate instructional groups. In the TD classroom, grouping may occur but not as extensively as in the OS school and diagnosis of students' skill development was done by one teacher rather than a group or team of teachers.

2. Students in the OS school had contact with many other students and more than one teacher, thus if a particular teacher-student conflict occurred, the student had other teachers to identify with and the teacher gained support from the other team members in dealing with student and program difficulties. In the TD school, students had contact primarily with one teacher all year long. If a teacher-student conflict arose, alternate teacher models to interact with were limited. Furthermore, the teachers in the TD school functioned more independently with curriculum and behavior problems than the OS school teacher.

3. Students in the OS school became more involved in their curriculum by having an "interest" day when they chose the topic to be studied based on their interests. The students in the TD school were not as directly involved in the curriculum as the students in the OS school.

4. With team teaching the students received the benefits of the teachers' strongest teaching areas since they taught in the areas they were interested in, whereas the students in the TD school have one teacher primarily responsible for covering the major subject areas, some of which she may be less interested in than others.

5. Because of the sharing of curriculum materials in the OS school, the students had access to a greater variety of materials. In the TD school the same materials were duplicated for each teacher, thus restricting the variety of materials.

6. With the use of the auxiliary materials center, students in the OS school had access to many more library and reference books, materials and media equipment than would be found in one TD classroom.

Based on information gathered in interviews with school officials, several features have been presented about the OS school that distinguish it from the other schools. In general, the major distinguishing feature of the OS school appeared to be the team teaching organization enhanced by the open space building that could facilitate a greater flexibility for instructional grouping of students in order to approach students' individual differences in learning.

Summary of Statistical Analyses

The summary of the results of the statistical analyses are as follows:

1. Seventeen factors resulted from the factor analysis of the Sixth-Grade Student Opinion Poll. Each of the factors was interpreted from the content of the two to four highest loading items. Spearman-Brown split-half reliability coefficients were computed for factors having at least ten items loading significantly on them. Two of the factors failed to meet the ten-item criteria. Only one factor out of 15 displayed enough internal consistence among items not to need an increase in length to raise the reliability coefficient to .70 or higher. When school was considered as a variable in relation to attitudes toward school, five factors, F, B, L, M and N, were significantly related to school.

2. Two of the 17 factors appeared to be related to social position scores. Students with lower social position scores appeared to be satisfied on Factor B (the students' opinion of how others achieve in school) while students with higher social position scores appeared to be dissatisfied. Students with higher social position scores appeared to be satisfied on Factor D (peers' acceptance of each other) while students with lower social position scores appeared to be dissatisfied.

3. Factor A (students' interest in subject matter content), Factor M (teacher control of the class), and Factor C (what teachers do in a classroom) seemed to be related to sex membership. Females are more satisfied and males dissatisfied with the subject matter content and the teachers' control of the class. Males were more satisfied and females

dissatisfied with what the teachers do (use of competition, things the teacher requests students to do, usefulness of teacher-presented material) in a classroom.

4. Several factors were found to be related to achievement subtest scores. Factor B (the students' opinion of how others achieve in school) and Factor D (peers' acceptance of each other) seemed to be significantly related to all but two achievement subtests. Factor C (what teachers do in a classroom) appeared to be significantly related to all but three subtests while Factor H (self-initiative) and Factor K (students' feelings toward school) seemed related to only one of the achievement subtests.

5. An analysis of the teacher-pupil verbal interaction in the open-space and traditionally designed school indicated that both groups of teachers could be described as expressing a more indirect influence with their verbal behaviors (teachers' verbal behaviors that encourage student participation in class) than a more direct influence (teachers' verbal behaviors that tend to restrict student participation in class).

A description of the open-space school included in the current investigation was presented for the purpose of distinguishing it from the other schools.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The major objective of the present study was the description of students' attitudes toward school attending an open-space school and a traditionally designed school. The Sixth-Grade Student Opinion Poll (SOP) was administered to 141 sixth-grade students from both elementary schools then factor analyzed by a principle components solution to determine students' specific attitudes toward school. Five research questions were formulated and the findings are summarized below.

Question One

Question one asked what were the students' attitudes toward school. Seventeen factors were derived from the factor analysis and included such areas as peer social interaction, subject matter difficulty, and teacher control of class. The 17 factors were correlated with the two schools and the results indicated that five factors were significantly related to the variable, school.

Question Two

Question two asked if there were relationships between the students' attitudes toward school and their socioeconomic status. Scores from the

Two-Factor Index were correlated with the 17 factors of the Sixth-Grade SOP. The results indicated that two factors were significantly related to social position.

Question Three

Question three asked if there were relationships between sex membership and students' attitudes toward school. The students' sex membership was correlated with the 17 factors of the Sixth-Grade SOP. The results indicated that three factors were significantly related to sex membership.

Question Four

Question four asked if there were relationships between academic achievement and students' attitudes toward school. The subtest scores from the Stanford Achievement Test were correlated with the 17 factors of the Sixth-Grade SOP. The results indicated that three factors were significantly related to six of the achievement subtests while two factors were significantly related to a single but different achievement subtest.

Question Five

Question five asked if the teachers' verbal interaction patterns in a classroom tend to be "direct" or "indirect". Audio tape recordings of teacher-student verbal interaction from both schools were analyzed and a revised I/D ratio computed for both schools. Both groups of teachers appeared to utilize "indirect" verbal interaction in the classroom.

Conclusions

The reader should be cautious in considering the following conclusions stemming from a descriptive study. No cause-effect relationships can be drawn from the results of the current study and such terms as "may" or "appear" should be viewed as speculations on the relationships depicted in the results.

The review of the literature has pointed to several differing opinions on student attitudes toward school. Some authors represent students' attitudes toward school as unidimensional. More recently, several investigators have represented students' attitudes toward school as multidimensional. The results of the current study tend to support the viewpoint that attitudes toward school should be viewed as multidimensional rather than unidimensional. Ten factors were reported by Auria and Frankiewicz (1967) in a factor analysis of responses to the SOP by tenth-graders, while Cullen (1967) reported four factors from eighth-graders in response to the SOP. Seventeen factors were derived from the current study with a sample of sixth-grade students. The reason more factors were found in the current study than in the two studies cited above may be due to the different factor analytic procedures employed. The two above-mentioned studies employed communality estimates in the diagonal of the correlation matrix while the current study employed unity in the diagonal. According to Horst (1965, p. 118) "the number of factors required is more for 1's in the diagonal than for methods with communalities in the diagonal." Five factors were significantly related to the variable school. The students attending the open-space school reported they were satisfied with the difficulty level of

of the subject matter, the ability level of the students they are grouped and competing with, and the frequency with which they are permitted to work in groups rather than by themselves, while students in the traditionally designed school were reportedly dissatisfied with this factor. It is speculated that this finding may lend support to the application of the basic philosophy and organization of the open-space school to provide flexible grouping of the students in an attempt to more adequately meet their individual instructional needs. With the remaining four factors, the students attending the traditionally designed school expressed satisfaction while students from the open-space school expressed dissatisfaction. Students attending the traditionally designed school may be satisfied with how others achieve in school (grades, being serious toward school work, or excelling in sports), the interest shown by peers and teachers in student social affairs, teachers' classroom control, and the perception of teachers' abilities with regard to knowledge of and methods of presenting subject matter. It is speculated that satisfaction with the above cited areas of school may be related to greater structure provided in a traditionally designed school within each of those areas. In other words, the way students achieve is defined within a certain range of activities and deviations outside that range are not available or possibly not expected. The expectation of structure or limits placed on classroom control, subject matter presentation, and interest in student social affairs by the students and/or teachers, may be greater as a function of a narrower range of models or alternatives from which to choose. With regard to the dissatisfaction of students from the open-space school on these four factors, it is speculated that the students may perceive

either too much or not enough structure in each of the areas. With the perception of too much structure, the students may want even greater flexibility in the four areas that had been achieved during the first year of operation. With the perception of not enough structure, the students may want more structure as a result of wanting to return to an environment more like the traditional classroom in the four areas.

Students with lower social position scores appeared to be satisfied while students with higher social position scores were dissatisfied with how others achieve in school (grades, being serious toward school work, or excelling in sports). Thus, a speculation might be made to the idea that students from lower social positions may be more satisfied with structure in the school environment related to evaluating their achievement rather than less tangible gains such as pursuing knowledge for knowledge's sake. Students with higher social position scores appeared to be satisfied while students with lower social position scores were dissatisfied with how their peers accepted each other. This finding may be related to an interest in social interaction and acceptability of students with higher social position scores possibly to the exclusion of students with lower social position scores.

Females appeared to be satisfied while males were dissatisfied with the interest level of the subject matter content and the teachers' control of the class. This finding seemed logical in that females tend to be more successful than boys in avoiding academic and behavior problems in the classroom. Males appeared to be satisfied while females were dissatisfied with what teachers do in a classroom (speed of exposure to subject matter content, the usefulness of the subject matter

covered, use of competition between students). It is speculated that while the males were satisfied with what teachers do in class, the females were not satisfied in that they expressed an interest satisfaction with the subject matter content and may have preferred more or less competition and faster or slower exposure to subject matter content.

Three factors appeared to be related to achievement subtest scores. Students scoring low on the achievement subtests appeared to be satisfied with how others achieve in school and what the teachers do in a classroom (speed of exposure to subject matter content, the usefulness of the subject matter covered, use of competition between students). It is speculated that lower achieving students may be interested in maintaining the structure of the current classroom environment while higher achieving students may want faster exposure to subject matter content, more competition between students or a change in the grading system. Higher achieving students appeared to be satisfied with how their peers accepted each other. This finding may be related to being accepted by peers as a function of academic achievement.

Both groups of teachers were described as being more "indirect" than "direct" in their verbal interactions with students. Their verbal behaviors may tend to encourage student participation in class. It is speculated that this finding tends to support the idea that student-centered instruction can be provided in both a traditionally designed and open-space school. The open-space school may simply provide a building structure that enhances a student-centered approach to instruction.

Recommendations for Further Research

The following are some suggestions for further research:

1. A study to further refine the Sixth-Grade SOP is needed. New items related to those heavily weighted on each of the factors need to be generated and administered to sixth-graders.

2. A study using the Sixth-Grade SOP with sixth-grade students who have been attending the open-space school for long periods of time may be beneficial by providing data to evaluate the predictive value of the SOP.

3. A study of the open-space school's facilitation of more student-centered instruction using unobtrusive measures such as number of library books checked out, number of times reference books are used or number of times teachers are observed working with individuals or small groups and not lecturing.

4. Otto (1970) suggested that tradition and local community pressures have significant influence over school practices. A study might be undertaken that would involve the assessment of parental attitudes toward school or toward the introduction of various innovations in the schools from several communities or from various locations in a city for comparison as to the amount of change that has been introduced and adopted. Information of this nature might be valuable in predicting what locations will be supportive of change in the future and the types of change that will be tolerated. Measures of community attitudes toward change in the schools might take the form of such things as percentage of parents attending school functions or school board meetings, number of parent-teacher conferences. Measures of the

nature of parent involvement may be helpful such as those interested in school board meetings and parent-teacher meetings compared with those only interested in social or athletic events of the school.

BIBLIOGRAPHY

Academic Theory. "An idea moves into action." Vol. 6 (1970, 168-170.

American School and University. "An Open Environment for Miner Elementary School." Vol. 38 (1965), 29-31.

Amidon, E. J. and N. A. Flanders. The Role of the Teacher in the Classroom. Minneapolis, Minnesota: Association for Productive Teaching, 1967.

Anderson, R. A. "Open learning places." Educational Technology. Vol. 10 (1970), 13-15.

Anderson, R. H. and D. P. Mitchell. "Team teaching, new learning concepts demand changes in school plant design." The Nation's Schools. Vol. 65 (1960), 75-82.

Auria, C. and E. Chapline. "Differences between school satisfied and dissatisfied adolescents in psychological functioning and classroom effectiveness." Paper delivered to American Educational Research Association, New York City, 1967.

Auria C. and R. G. Frankewicz. "Compnents of school satisfaction among a group of ninth and tenth graders." Proceedings of the 75th Annual Convention of the American Psychological Association. Vol. 2 (1967), 331-332.

Berelson, B. and G. A. Steiner. Human Behavior: An Inventory of Scientific Findings. New York: Harcourt, Brace and World, 1964.

Brodie, T. A. "Attitude toward school and academic achievement." Personnel and Guidance Journal. Vol. 43 (1964), 375-378.

Bruning, J. L. and B. L. Kintz. Computational Handbook of Statistics. Glenview, Illinois: Scott, Foresman, 1968.

Coody, B. E. and W. S. Sandefur. "Designing schools for variability." Educational Leadership. Vol. 24 (1967), 505-507.

Crews, R. L. "One room space school." Illinois Education. Vol. 55 (1967), 304-306.

Cullen, R. J. "Achievement, ability, and self-attitude correlates of components of school attitude among eighth-grade students." Unpublished doctoral dissertation. Kent State University, 1969.

"Design for team teaching." The Instructor. Vol. 78 (1968), 65-72.

Diedrich, R. C. and P. W. Jackson. "Satisfied and dissatisfied students." Personnel and Guidance Journal. Vol. 47 (1969), 641-649.

Dunbar, H. S. "No doors slam here." New York State Education. Vol. 58 (1960), 34-35.

Eberle, R. F. "The Open Space School." The Clearing House. Vol. 44 (1969), 23-28.

Finley, R. E. "Environmental and experimental characteristics of students and attitudes toward school." Unpublished doctoral dissertation. Purdue University, 1968.

Flanders, N. A. "Some relationships among teacher influence, pupil attitudes and achievement." Interaction Analysis: Theory, Research, and Application. Eds., E. J. Amidon and J. B. Hough. Reading, Massachusetts: Addison-Wesley, 1967a.

Flanders, N. A. "The problem of observer training and reliability." Interaction Analysis: Theory, Research, and Application. Eds., E. J. Amidon and J. B. Hough. Reading, Massachusetts: Addison-Wesley, 1967b.

Flanders, N. A. Analyzing Teacher Behavior. Reading, Massachusetts: Addison-Wesley, 1970.

Fredman, N. J. "The measurement of pupil attitudes toward school." Unpublished doctoral dissertation. Northwestern University, 1968.

Gallaher, T. H. "Effects of time parameters on the measurement of teachers' verbal behavior patterns using the Flanders system of interaction analysis." Unpublished doctoral dissertation. University of Oklahoma, 1969.

Godbold, D. H. "A comparison of attitudes toward school, self-perception, and achievement of eighth-grade pupils attending junior high schools in communities of different levels of economic affluence." Unpublished doctoral dissertation. University of Michigan, 1968.

Gross, R. "From innovations to alternatives: a decade of change in education." Phi Delta Kappan. Vol. 53 (1971), 22-24.

Guilford, J. P. Fundamental Statistics in Psychology and Education. New York: McGraw-Hill, 1965.

Hetzel, D. C. "An overview of British Infant Schools." Young Children. Vol. 25 (1969), 336-339.

Hollingshead, A. B. and F. C. Redlich. Social Class and Mental Illness. New York: Wiley and Sons, 1958.

Horst, P. Factor Analysis of Data Matrices. New York: Holt, Rinehart and Winston, 1965.

Jackson, P. W. and J. W. Getzels. "Psychological health and classroom functioning: a study of dissatisfaction with school among adolescents." Journal of Educational Psychology. Vol. 50 (1959), 295-300.

Jackson, P. W. and H. M. Lahaderne. "Scholastic success and attitude toward school in a population of sixth-graders." Journal of Educational Psychology. Vol. 58 (1967), 15-18.

Kelley, T. L., R. Madden, E. F. Gardner, and H. C. Rudman. Stanford Achievement Test Manual, Intermediate II Battery. New York: Harcourt, Brace and World, 1964.

Kellaugh, K. "Open-plan school." The Instructor. Vol. 80 (1970), 75-76.

Kleparchuk, H. "Supervising needs as perceived by teachers and principals of open space schools." Unpublished doctoral dissertation. University of Oregon, 1969.

Lahaderne, H. M. "Attitudinal and intellectual correlates of attention: a study of four sixth-grade classrooms." Journal of Educational Psychology. Vol. 59 (1968), 320-324.

LaShier, W. S. and P. Westmeyer. "The use of interaction analysis in BSCS laboratory block classrooms." Journal of Teacher Education. Vol. 18 (1967), 439-446.

Ledbetter, T. A. "A study of open spaces for teaching." Unpublished doctoral dissertation. University of Tennessee, 1969.

Micali, R. "A study of expressed attitudes of sixth graders toward selected classroom and school practices and procedures." Unpublished doctoral dissertation. Rutgers-The State University, 1964.

Neale, D. C., N. Gill, and W. Tismer. "Relationship between attitdues toward school subjects and school achievement." Journal of Educational Research. Vol. 63 (1970), 232-237.

Otto, H. J. "Innovations in the elementary school curriculum." Educational Technology. Vol. 10 (1970), 32-37.

Simon, A. and E. G. Boyer (Eds.). Mirrors for Behavior. Philadelphia: Research for Better Schools, 1968.

Soar, R. S. "Pupil needs and teacher-pupil relationships: experience needed for comprehending reading." Interaction Analysis: Theory, Research, and Application. Eds., E. J. Amidon and J. B. Hough. Reading, Massachusetts: Addison-Wesley, 1967.

Spodek, B. "Alternatives to traditional education." Peabody Leadership. Vol. 48 (1970), 140-146.

Staples, I. E. "The Open Space Plan in Education." Educational Leadership. Vol. 28 (1970), 458-463.

Wells, L. R. "A study of time sampling techniques of classroom behavior using interaction analysis and interaction sequence analysis." Unpublished doctoral dissertation. University of Nebraska, 1970.

APPENDIXES

APPENDIX A

SUMMARY OF CATEGORIES FOR INTERACTION ANALYSIS

SUMMARY OF CATEGORIES FOR INTERACTION ANALYSIS*,**

1. ACCEPTS FEELING: accepts and clarifies the feeling tone of the students in a nonthreatening manner. Feelings may be positive or negative. Predicting or recalling feelings is included.

2. PRAISES OR ENCOURAGES: praises or encourages student action or behavior. Jokes that release tension, but not at the expense of another individual; nodding head, or saying 'um hm?' or 'go on' are included.

3. ACCEPTS OR USES IDEAS OF STUDENTS: clarifying, building or developing ideas suggested by a student. As teacher brings more of his own ideas into play, shift to Category Five.

4. ASKS QUESTIONS: asking a question about content or procedure with the intent that a student answer.

5. LECTURING: giving facts or opinions about content or procedures, expressing his own ideas, asking rhetorical questions.

6. GIVING DIRECTIONS: directions, commands, or orders with which a student is expected to comply.

7. CRITICIZING OR JUSTIFYING AUTHORITY: statements intended to change student behavior from nonacceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.

8. STUDENT TALK-RESPONSE: talk by students in response to teacher Teacher initiates the contact or solicits student statement.

9. STUDENT TALK-INITIATION: talk by students, which they initiate. If 'calling on' student is only to initiate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.

10. SILENCE OR CONFUSION: pauses, short periods of silence, and periods of confusion in which communication cannot be understood by the observer.

*There is NO scale implied by these numbers. Each number is classificatory; it designates a prticular kind of communication event. To write these numbers down during observation is to enumerate -- not to judge a position on a scale.

**Amidon, E. J., and Flanders, N. A. The Role of the Teacher in the Classroom. Minneapolis, Minnesota: Association for Productive Teaching, Inc., 1967, p. 14.

APPENDIX B

DESCRIPTION OF SPECIFIC SUBTESTS OF THE STANFORD ACHIEVEMENT TEST

DESCRIPTION OF SPECIFIC SUBTESTS OF

THE STANFORD ACHIEVEMENT TEST (SAT)

The following subtest descriptions were taken from the SAT Intermediate II Battery Manual (Kelley, et. al., 1964).

> Word meaning: . . . the Word Meaning Test consists of forty-eight multiple-choice items. In addition to items measuring knowledge of synonyms, of simple definitions, and of ready associations, there are included items designed to measure higher-level comprehension of the concepts represented by words, and fullness of understanding of terms (p. 5).
>
> Paragraph meaning: The Paragraph Meaning Test consists of a series of paragraphs, graduated in difficulty. One or more words have been omitted from each paragraph. The pupils' task is to demonstrate his comprehension of the paragraph by selecting from four choices that are offered him the proper word for each omission. It also includes complete paragraphs about which questions are asked, to be answered by selecting one of four possible choices. The test provides a functional measure of the pupils' ability to comprehend connected discourse involving levels of comprehension varying from extremely simple recognition to the making of inferences from what is stated in several sentences.
>
> . . . the areas covered by the paragraphs include a broad category of miscellaneous items from general reading material, life science, physical science, geography, history, literature, other social sciences, and the fine arts (p. 5).
>
> Spelling: The Spelling Test consists of fifty-six multiple-choice items in which the pupil chooses from four words the one which is spelled incorrectly. Because each item requires four spelling judgments, a difficult item can be secured by selecting words that are commonly used and likely to be in spelling books (p. 5).
>
> Language: The Language Test consists of exercises in Usage, Punctuation, Capitalization, Dictionary Skills, and Sentence Sense.
>
> . . . the Usage part of the test samples, by means of thirty-eight items, correct verb usage, the use of pronouns and adjectives, choice of words, double negatives, and substandard corruptions. . . The Punctuation part of the test measures the use of periods, commas, apostrophes, colons, semicolons; question marks, exclamation points and quotation marks.

The item situation in the capitalization part include thirty-six items which sample nearly the entire domain of capitalization and also the situation when no capital letter is needed.

Study skills in language are measured by the Dictionary Skills part of the Language Test. It includes such content as selecting the appropriate meaning of a word from multiple alternatives, using the pronunciation key (adapting to the diacritical marks), syllabifying and accenting, using locational skills (alphabetization and guide words), and identifying parts of speech.

The Sentence Sense part probes the students' ability to recognize correct and faulty sentences in written English. Three possibilities are included: groups of words that may be correctly punctuated as two or more sentences; groups of words that may be correctly punctuated as simple complete sentences; and groups of wrods which are not sentences (p. 6).

Arithmetic computation: The Arithmetic Computation Test measures proficiency in the computational skills appropriate for grades five and six. The computation items are drawn from the fundamental operations of addition, subtraction, multiplication, and division. The tests are in multiple-choice form; the response 'not given' (NG) is included as one of the choices in each item in order to discourage guessing by pupils not able to perform correctly the required operations. The time limit for the test is generous, reducing the emphasis on computational speed. The exercises are representative of the usual curriculum and textbook patterns of content (p. 6).

Arithmetic concepts: The Arithmetic Concepts Test measures in a thirty-two item multiple-choice test the understanding of place value, Roman numerals, operational terms, the meaning of fractions and of multiplication, interrelationship of the two fundamental operations (addition and multiplication) and their inverses (subraction and division), directional numbers, number series, number names, estimation, average, number sentences, meaning of per cent, decimal fraction positions, common denominator, rounding whole numbers, decimal and common fraction equivalents, reduction of fractions, and geometric terms (pp. 6-7).

Arithmetic applications: The Arithmetic Applications Test consists of thirty-nine multiple-choice items which measure reasoning with problems taken from life experiences . . . The pupil is required to apply his mathematical knowledge and ability to think mathematically in practical situations which concern area, volume, ratio, graphs, tables, scales, per cent,

business transactions, averages, problems with circles and other geometric figures, and the selection of mathematical models for problems (p. 7).

Social studies: The Social Studies Test is divided into two parts. Part A: Content covers areas that may loosely be defined as history, geography, and civics. They involve the interpretationship of the various disciplines. The relationships listed are frequently those of cause and effect and if-then sequences of events which have occurred or are likely to occur if gistorical precedent maintains.

The inclusion of Part B: Study Skills in the Social Studies Test indicates the author's recognition of the importance of measuring the abilities by which pupils are able to make use of reference materials. This part includes twenty-nine items which may be classified as interpretation of graphs and tables, reading of maps, and interpretation of a political poster (p. 7).

Science: The primary objectives measured by the Science Test are (1) the ability to see the application of the principles of science in our environment and everyday activities, (2) knowledge of the facts and generalizations from the various branches of the natural sciences, and (3) some knowledge of the scientific method (p. 7).

APPENDIX C

THE SIXTH-GRADE STUDENT OPINION POLL

INTERITEM CORRELATION COEFFICIENTS

THE SIXTH-GRADE STUDENT OPINION POLL INTERITEM

CORRELATION COEFFICIENTS

With Items										
					Item 1					
1-10	1.000	.299	.131	.121	.072	.255	.157	.249	-.067	.289
11-20	.221	.109	.206	.052	.186	.186	.316	.360	.155	.011
21-30	.163	.152	.156	.132	.378	.051	-.084	.095	.218	.186
31-40	.282	.179	.361	.171	.319	.069	.307	.280	.381	.201
41-50	.316	.248	.212	.155	.267	.267	.059	.166	.306	.324
51	.093									
					Item 2					
1-10	.229	1.000	.070	.186	.089	.174	.022	.018	-.006	.098
11-20	.134	.087	.185	.068	.098	.201	.185	.194	.032	.088
21-30	.084	.125	.144	.071	.295	.208	.176	.162	.194	.076
31-40	.219	.229	.220	.124	.144	.180	.198	.179	.187	.246
41-50	.152	.227	.075	.162	.209	.268	.098	.080	.237	.329
51	.210									
					Item 3					
1-10	.131	.070	1.000	.057	.095	1.032	.050	.131	.012	.001
11-20	-.031	-.072	.056	.107	.087	-.007	.152	.173	.021	.141
21-30	.313	.082	.018	-.017	-.043	.034	.142	.143	.034	-.012
31-40	.207	.152	.024	.090	.110	.041	-.009	.027	-.099	.061
41-50	-.002	.113	.055	-.017	.061	.009	.164	-.080	.004	.071
51	.024									

Item 4

1-10	.121	.186	.057	1.000	-.042	-.055	.183	.151	-.011	.135
11-20	.137	.148	.136	.172	.254	.167	.258	.154	.112	.150
21-30	.056	.177	.015	.181	.211	.125	-.025	.085	.151	.188
31-40	.108	.219	.255	.211	.188	.163	.215	.304	.135	.229
41-50	.143	.211	.271	.307	.134	.181	.225	.172	.343	.265
51	.186									

Item 5

1-10	.072	.089	.095	-.042	1.000	.135	.067	.174	.098	.131
11-20	.036	.117	.063	.039	.113	.146	.073	.138	.106	.248
21-30	.153	.173	.065	.121	.198	.090	.087	.196	.174	.065
31-40	.193	.093	-.004	.169	.045	.011	.062	-.011	-.036	.125
41-50	.171	.067	.047	.079	.232	.179	.312	.201	-.021	.168
51	.144									

Item 6

1-10	.255	.174	-.032	-.055	.135	1.000	.045	.070	.022	.064
11-20	.092	.056	.026	-.040	.119	.119	-.008	.184	.165	.028
21-30	.008	.346	.125	.055	.188	.136	.055	.047	.218	.090
31-40	.140	.168	.246	.184	.148	-.126	.047	.025	.169	.030
41-50	.238	.045	-.104	.137	.224	.404	.192	.035	.229	.345
51	.107									

Item 7

1-10	.157	.022	.050	.183	.067	.045	1.000	.096	.044	.147
11-20	.110	.164	.295	.177	.214	.155	.089	.292	.167	.242
21-30	.085	.167	-.039	.161	.145	.051	-.108	.037	.187	.077
31-40	.242	.089	.295	.315	.373	.124	.253	.210	.104	.283
41-50	.001	.087	.189	.172	.218	.180	.029	.030	.209	.180
51	.073									

Item 8

1-10	.249	.018	.131	.151	.174	.070	.096	1.000	.137	.153
11-20	.126	.317	.206	.172	.186	.095	.346	.299	.155	.171
21-30	.193	.152	.186	.225	.430	.154	.039	.128	.218	.306
31-40	.313	.268	.206	.263	.259	.218	.116	.125	.159	.201
41-50	.196	.309	.152	.319	.300	.139	.183	.239	.244	.255
51	.242									

Item 9

1-10	-.067	-.006	.012	-.011	.098	.022	.044	.137	1.000	.151
11-20	.132	-.075	-.073	-.117	.063	-.016	-.052	-.063	-.053	.166
21-30	.052	-.002	-.216	.042	.004	-.061	.001	.097	.096	.020
31-40	-.097	.009	.089	-.051	.060	-.081	.168	-.076	-.007	.076
41-50	-.128	.044	.085	.068	.076	-.084	.116	.063	.076	.061
51	.124									

Item 10

1-10	.289	.098	.001	.135	.131	.964	.147	.153	.151	1.000
11-20	.060	.069	.211	.021	.234	.134	.059	.160	-.043	.122
21-30	.005	.350	-.046	.134	.180	-.030	-.034	.043	.185	.117
31-40	.107	.077	.109	.150	.191	-.036	.191	.177	.112	.136
41-50	.191	.081	.193	.126	.172	.192	.192	.132	.159	.216
51	.226									

Item 11

1-10	.221	.134	-.031	.137	.036	.092	.110	.126	.132	.060
11-20	1.000	.176	.041	.148	.094	.218	.175	.323	.170	-.107
21-30	.159	-.020	.003	.240	.141	-.060	.051	.300	.221	.186
31-40	.192	.197	.199	.165	.177	.156	.302	.189	.161	.102
41-50	.297	.234	.168	.245	.135	.022	.092	.103	.218	.129
51	.321									

Item 12

1-10	.109	.087	-.072	.148	.117	.056	.164	.317	-.075	.069
11-20	.176	1.000	.331	.376	.212	.212	.193	.402	.092	.172
21-30	.234	-.033	.036	.315	.280	.125	.138	.278	.139	.294
31-40	.122	.333	.390	.283	.305	.163	.192	.141	.246	.098
41-50	.250	.280	.277	.426	.224	.172	.152	.315	.181	.231
51	.163									

Item 13

1-10	.206	.185	.056	.136	.063	.026	.295	.206	-.073	.211
11-20	.041	.331	1.000	.187	.106	.197	.268	.248	.111	.192
21-30	.001	.182	.078	.305	.205	.060	.028	.137	.143	.198
31-40	.239	.253	.287	.342	.304	.202	.157	.167	.148	.059
41-50	.148	.265	.288	.178	.224	.160	.047	.121	.324	.279
51	.288									

Item 14

1-10	.052	.068	.107	.172	.039	-.040	.177	.172	-.117	.021
11-20	.148	.376	.187	1.000	.086	.144	.204	.249	.079	.078
21-30	.196	.080	.221	.114	.177	.076	-.034	.226	.112	.278
31-40	.102	.247	.128	.115	.187	.221	.135	.106	.034	.058
41-50	.147	.119	.126	.263	.153	.078	.159	.117	.188	.184
51	.183									

Item 15

1-10	.186	.098	.087	.254	.113	.119	.214	.186	.063	.234
11-20	.094	.212	.106	.086	1.000	.105	.228	.297	.217	.142
21-30	.151	.267	.035	.148	.243	.131	-.063	.021	.217	.211
31-40	.151	.142	.197	.200	.236	.136	.138	.232	.246	.148
41-50	.258	.125	.104	.191	.245	.142	.159	.060	.340	.234
51	.133									

Item 16

1-10	.186	.201	-.007	.167	.146	.119	.155	.095	-.016	.134
11-20	.214	.212	.197	.144	.105	1.000	.082	.147	.158	.142
21-30	.093	.117	.123	.117	.184	-.034	-.003	.238	.247	.123
31-40	.061	.084	.167	.140	.178	.078	.138	.262	.184	.019
41-50	.228	.214	.309	.191	.116	.048	.159	.131	.219	.201
51	.163									

Item 17

1-10	.186	.185	.152	.258	.073	-.008	.089	.346	-.052	.059
11-20	.218	.193	.268	.204	.228	.082	1.000	.272	.155	.054
21-30	.093	.200	.178	.220	.263	.103	.131	.139	.256	.235
31-40	.061	.238	.298	.274	.327	.234	.221	.240	.159	.082
41-50	.228	.380	.278	.221	.240	.208	.114	.006	.321	.256
51	.163									

Item 18

1-10	.316	.194	.173	.154	.138	.184	.292	.299	-.063	.160
11-20	.175	.402	.248	.249	.297	.147	.272	1.000	.205	.132
21-30	.151	.148	.136	.228	.203	.074	.107	.183	.329	.401
31-40	.286	.391	.401	.400	.428	.151	.368	.304	.299	.172
41-50	.222	.381	.326	.375	.269	.226	.148	.195	.269	.394
51	.278									

Item 19

1-10	.360	.032	.021	.112	.106	.165	.167	.155	-.053	-.043
11-20	.323	.092	.111	.079	.217	.158	.155	.205	1.000	.056
21-30	.286	.108	-.030	.247	.138	.010	-.020	.127	.034	.346
31-40	.290	.190	.261	.190	.186	.194	.066	.211	.166	.158
41-50	.360	.284	.092	.143	.285	.149	.055	-.026	.263	.088
51	.209									

Item 20

1-10	.115	.088	.141	.150	.248	.028	.242	.171	.166	.122
11-20	-.107	.172	.192	.078	.142	.142	.054	.132	.056	1.000
21-30	.067	.145	-.016	.117	.211	.156	.086	.160	.171	.045
31-40	.274	.242	.223	.285	.171	.101	.142	.113	-.119	.379
41-50	.146	.242	.241	.231	.210	.184	.201	.052	.075	.157
51	.088									

Item 21

1-10	.163	.084	.313	.056	.153	.008	.085	.193	.052	.005
11-20	.159	.234	.001	.196	.151	.093	.151	.286	-.011	.067
21-30	1.000	.020	-.005	-.012	.172	.158	.106	.145	.223	-.005
31-40	.154	.247	.119	.020	.129	-.006	.116	-.063	.023	.203
41-50	.007	.056	.008	.124	.171	.067	.211	-.006	.003	.071
51	.152									

Item 22

1-10	.152	.125	.082	.177	.173	.346	.167	.152	-.002	.350
11-20	-.020	-.033	.182	.080	.267	.117	.200	.148	.108	.145
21-30	.020	1.000	.009	.098	.167	.110	-.129	.015	.344	.156
31-40	.114	.156	.029	.197	.206	.033	.050	.136	.020	.106
41-50	.163	.092	.050	.057	.147	.262	.167	-.023	.167	.182
51	.161									

Item 23

1-10	.156	.144	.018	.015	.065	.125	-.039	.186	-.216	-.046
11-20	.003	.034	.078	.221	.035	.123	.178	.136	-.030	-.016
21-30	-.005	.009	1.000	.121	.252	.046	.001	.053	.126	.017
31-40	-.048	.110	.018	.175	-.001	.077	.047	.163	-.003	.104
41-50	.178	.165	.064	.086	.073	.106	.044	.174	.103	.215
51	.122									

Item 24

1-10	.132	.071	-.017	.181	.121	.055	.161	.225	.042	.134
11-20	.240	.315	.305	.114	.148	.117	.220	.228	.247	.117
21-30	-.012	.098	.121	1.000	.222	.102	.017	.146	.039	.180
31-40	.135	.355	.151	.421	.259	.334	.103	.238	.168	.115
41-50	.250	.312	.184	.233	.246	.054	.220	.149	.281	.236
51	.243									

Item 25

1-10	.278	.295	-.043	.211	.198	.188	.145	.430	.004	.180
11-20	.141	.280	.205	.177	.243	.184	.263	.203	.138	.211
21-30	.172	.167	.252	.222	1.000	.217	-.018	.133	.339	.194
31-40	.242	.321	.386	.375	.344	.124	.377	.300	.259	.251
41-50	.438	.263	.248	.299	.379	.335	.238	.313	.298	.379
51	.189									

Item 26

1-10	.051	.208	.034	.125	.090	.136	.051	.154	-.061	-.030
11-20	-.060	.125	.060	.076	.131	-.034	.103	.074	.010	.156
21-30	.158	.110	.046	.102	.217	1.000	.136	.028	.017	-.117
31-40	.193	.215	.026	.152	.133	.101	-.017	-.043	-.008	.188
41-50	.071	-.014	-.029	-.019	.152	.017	.110	.065	.043	.193
51	-.062									

Item 27

1-10	-.084	.176	.142	-.025	.087	.055	-.108	.039	.001	-.034
11-20	.051	.138	.028	-.034	-.063	-.003	.131	.107	-.020	.086
21-30	.106	-.129	.001	.017	-.018	.136	1.000	-.017	.070	-.027
31-40	.074	.060	.028	.055	.111	.068	.040	.024	-.020	.148
41-50	.101	.131	.125	.070	-.048	-.040	.128	.005	.036	.168
51	.154									

Item 28

1-10	.095	.162	.143	.085	.196	.047	.037	.128	.097	.043
11-20	.300	.027	.137	.226	.012	.238	.139	.183	.127	.160
21-30	.145	.015	.053	.146	.133	.028	-.017	1.000	.062	.212
31-40	.204	.238	.170	.066	.157	.193	.109	.171	.135	.012
41-50	.203	.229	.185	.229	.081	.160	.187	.096	.187	.224
51	.249									

Item 29

1-10	.218	.194	.034	.151	.174	.218	.187	.218	.096	.187
11-20	.221	.139	.143	.112	.217	.247	.256	.329	.034	.171
21-30	.223	.344	.126	.039	.339	.017	.070	.062	1.000	.246
31-40	.252	.268	.393	.294	.349	.069	.244	.249	.095	.267
41-50	.256	.278	.272	.418	.201	.235	.152	.166	.275	.460
51	.182									

Item 30

1-10	.186	.076	.012	.188	.065	.090	.077	.306	.020	.117
11-20	.186	.294	.198	.278	.211	.123	.235	.401	.346	.045
21-30	-.005	.156	.017	.180	.194	-.117	-.027	.212	.246	1.000
31-40	.275	.282	.377	.204	.314	.049	.384	.459	.332	.041
41-50	.235	.369	.352	.401	.231	.106	.192	.174	.281	.248
51	.122									

Item 31

1-10	.282	.219	.207	.108	.193	.140	.242	.313	-.097	.107
11-20	.019	.122	.239	.102	.151	.061	.286	.29-	.207	.274
21-30	.154	.114	-.047	.135	.242	.193	.074	.204	.252	.275
31-40	1.000	.308	.330	.382	.360	.169	.195	.209	.167	.151
41-50	.198	.332	.260	.330	.313	.243	.153	.125	.244	.341
51	.113									

Item 32

1-10	.179	.229	.152	.219	.093	.168	.089	.268	.009	.077
11-20	.197	.333	.253	.247	.142	.084	.238	.391	.190	.242
21-30	.247	.156	.110	.355	.321	.215	.060	.238	.268	.282
31-40	.308	1.000	.430	.324	.318	.262	.274	.160	.287	.202
41-50	.266	.407	.204	.341	.328	.151	.163	.288	.310	.370
51	.233									

Item 33

1-10	.361	.220	.024	.255	-.004	.246	.295	.206	.089	.109
11-20	.199	.390	.287	.128	.197	.167	.298	.401	.261	.223
21-30	.119	.029	.018	.151	.386	.026	.028	.170	.393	.377
31-40	.330	.430	1.000	.373	.511	.054	.380	.290	.369	.191
41-50	.328	.416	.466	.570	.322	.351	.140	.302	.447	.517
51	.168									

Item 34

1-10	.171	.124	.090	.211	.169	.184	.315	.263	-.051	.150
11-20	.165	.283	.342	.115	.200	.140	.274	.400	.190	.285
21-30	.020	.197	.175	.421	.375	.152	.055	.066	.294	.204
31-40	.382	.324	.373	1.000	.610	.243	.311	.289	.053	.161
41-50	.481	.345	.274	.373	.356	.191	.074	.204	.256	.452
51	.156									

Item 35

1-10	.319	.144	.110	.188	.045	.148	.373	.259	.060	.191
11-20	.177	.305	.304	.187	.236	.178	.327	.428	.186	.171
21-30	.129	.206	-.001	.259	.344	.133	.111	.157	.349	.314
31-40	.360	.318	.511	.610	1.000	.291	.468	.432	.367	.220
41-50	.442	.344	.458	.485	.314	.140	.244	.268	.361	.452
51	.144									

Item 36

1-10	.069	.180	.041	.163	.011	-.126	.124	.218	-.081	-.036
11-20	.156	.163	.202	.221	.136	.078	.234	.151	.194	.101
21-30	-.006	.033	.077	.334	.124	.101	.068	.193	.069	.049
31-40	.169	.262	.054	.243	.291	1.000	.111	.240	.055	.121
41-50	.206	.268	.007	.198	.152	-.020	.112	.204	.259	.093
51	.093									

Item 37

1-10	.307	.198	-.009	.215	.062	.047	.253	.116	.168	.191
11-20	.302	.192	.157	.135	.138	.138	.221	.368	.066	.142
21-30	.116	.050	.047	.103	.377	-.017	.040	.109	.244	.384
31-40	.195	.274	.380	.311	.468	.111	1.000	.517	.281	.093
41-50	.343	.253	.309	.304	.194	.175	.176	.318	.302	.296
51	.248									

Item 38

1-10	.280	.179	.027	.304	-.011	.025	.210	.125	-.076	.177
11-20	.189	.141	.167	.106	.232	.262	.240	.304	.211	.113
21-30	-.063	.136	.163	.238	.300	-.043	.024	.171	.249	.259
31-40	.209	.160	.290	.289	.432	.240	.517	1.000	.312	.154
41-50	.300	.330	.361	.295	.122	.144	.279	.217	.371	.279
51	.243									

Item 39

1-10	.381	.187	-.099	.135	-.036	.169	.104	.159	-.007	.112
11-20	.161	.246	.148	.034	.246	.184	.159	.299	.166	-.119
21-30	.023	.020	-.003	.168	.259	-.008	-.020	.135	.095	.332
31-40	.167	.287	.369	.053	.367	.055	.281	.312	1.000	.065
41-50	.250	.351	.378	.220	.031	.172	.126	.340	.377	.355
51	.165									

Item 40

1-10	.201	.246	.061	.229	.125	.030	.283	.201	.076	.136
11-20	.102	.098	.059	.058	.148	.019	.082	.172	.158	.041
21-30	.203	.106	.104	.115	.251	.188	.148	.012	.267	.041
31-40	.151	.202	.191	.161	.220	.121	.093	.154	.065	1.000
41-50	.082	.154	.162	.151	.057	.244	.203	.057	.138	.244
51	.130									

Item 41

1-10	.316	.152	-.002	.143	.171	.238	.001	.196	-.012	.191
11-20	.297	.250	.148	.147	.258	.228	.222	.360	.184	.146
21-30	.007	.163	.178	.250	.438	.071	.101	.203	.256	.235
31-40	.198	.266	.328	.481	.442	.206	.343	.300	.250	.082
41-50	1.000	.351	.221	.378	.240	.238	.292	.390	.292	.453
51	.221									

Item 42

1-10	.248	.227	.113	.211	.067	.045	.087	.309	.044	.081
11-20	.234	.280	.265	.119	.125	.214	.380	.381	.284	.242
21-30	.056	.092	.165	.312	.263	-.014	.131	.229	.278	.369
31-40	.332	.407	.416	.345	.344	.268	.253	.330	.351	.154
41-50	.351	1.000	.509	.459	.347	.273	.179	.242	.268	.379
51	.393									

Item 43

1-10	.212	.075	.055	.271	.047	-.104	.189	.152	.085	.193
11-20	.168	.277	.288	.126	.104	.309	.278	.326	.092	.241
21-30	.008	.050	.064	.184	.248	-.029	.125	.185	.272	.352
31-40	.260	.204	.466	.274	.458	.007	.309	.361	.378	.162
41-50	.221	.509	1.000	.366	.193	.149	.170	.195	.200	.291
51	.167									

Item 44

1-10	.155	.162	-.017	.307	.079	.137	.172	.319	.068	.126
11-20	.245	.426	.178	.263	.191	.191	.221	.375	.143	.231
21-30	.124	.057	.086	.233	.299	-.019	.070	.299	.418	.401
31-40	.330	.341	.570	.373	.485	.198	.304	.295	.220	.151
41-50	.378	.459	.366	1.000	.324	.265	.255	.354	.352	.448
51	.272									

Item 45

1-10	.267	.209	.061	.134	.232	.224	.218	.300	.076	.172
11-20	.135	.224	.224	.153	.245	.116	.240	.269	.285	.210
21-30	.171	.147	.073	.246	.379	.152	-.048	.081	.201	.231
31-40	.313	.328	.322	.356	.314	.152	.194	.122	.031	.057
41-50	.240	.347	.193	.324	1.000	.244	.171	.172	.203	.353
51	.130									

Item 46

1-10	.267	.268	.009	.181	.179	.404	.180	.139	-.084	.192
11-20	.022	.172	.160	.078	.142	.048	.208	.226	.149	.184
21-30	.067	.262	.106	.054	.335	.017	-.040	.160	.235	.106
31-40	.243	.151	.351	.191	.140	-.020	.175	.144	.172	.244
41-50	.238	.273	.149	.265	.244	1.000	.170	.313	.296	.401
51	.241									

Item 47

1-10	.059	.098	.164	.225	.312	.192	.029	.184	.116	.192
11-20	.092	.152	.047	.159	.159	.159	.114	.148	.055	.201
21-30	.211	.167	.044	.220	.238	.110	.128	.187	.152	.192
31-40	.153	.163	.140	.074	.244	.112	.176	.279	.126	.203
41-50	.292	.179	.170	.255	.171	.170	1.000	.213	.299	.204
51	.200									

Item 48

1-10	.166	.080	-.080	.172	.201	.035	.030	.239	.063	.132
11-20	.103	.315	.121	.117	.060	.131	.006	.195	-.026	.052
21-30	-.006	-.023	.174	.149	.313	.065	.005	.096	.166	.174
31-40	.125	.288	.302	.204	.268	.204	.318	.217	.340	.057
41-50	.390	.242	.195	.354	.172	.313	.213	1.000	.285	.410
51	.195									

Item 49

1-10	.306	.237	.004	.343	-.021	.229	.209	.244	.076	.159
11-20	.218	.181	.324	.188	.340	.219	.321	.269	.263	.075
21-30	.003	.167	.103	.281	.298	.043	.036	.187	.275	.281
31-40	.244	.310	.447	.256	.361	.259	.302	.371	.377	.138
41-50	.292	.268	.200	.352	.203	.296	.299	.285	1.000	.530
51	.318									

Item 50

1-10	.324	.329	.071	.265	.168	.345	.180	.255	.061	.216
11-20	.129	.231	.279	.184	.234	.201	.256	.394	.088	.157
21-30	.071	.182	.215	.236	.379	.193	.168	.224	.460	.248
31-40	.341	.370	.517	.452	.452	.093	.296	.279	.355	.244
41-50	.453	.379	.291	.448	.353	.401	.294	.410	.530	1.000
51	.291									

Item 51

1-10	.093	.210	.024	.186	.144	.107	.073	.242	.124	.226
11-20	.321	.163	.288	.183	.133	.163	.278	.209	.034	.088
21-30	.152	.161	.122	.243	.189	-.062	.154	.249	.182	.122
31-40	.113	.233	.168	.156	.144	.093	.248	.243	.165	.130
41-50	.221	.393	.167	.272	.130	.241	.200	.195	.318	.291
51	1.000									

APPENDIX D

THE ROTATED FACTOR MATRIX

THE ROTATED FACTOR MATRIX

Item	Factor A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1.	.242	.181				.170	.228				.198	.179		*.588	.199	-.175	
2.								.238	-.166	*.331	.392	.168					.365
3.							*.785										
4.				.186				*.685									
5.				.168	*.588			-.335							.171		.186
6.						.291		-.191			*.683		.240				
7.	.328		.209	*.555	-.189	.207			.211						-.183	*-.278	
8.					.175				.204						*.694		
9.		*-.674			.179				-.166			.278	-.170		.234		
10.					.181	*.561							*-.291	.249			
11.	.205											*.769					.176
12.	.191		.191						*.749						.172		
13.			*.555		-.216	.225			.249			-.179					.254
14.		*.266					.178	.258	*.626							-.174	
15.						*.494		.249		.193			.241	.192			
16.																	*.768
17.		.191	.166		-.187	.196	.293	.262							*.495		
18.	.445						.233		.395			.223	.169	.251			
19.			.180										*.806				
20.	.192	-.175		*.529	.227							-.276		-.279	.177		.236
21.			-.252	.199			*.434		*.408	.245		*.358			.175		
22.						*.739					.241						
23.		*.751													.245		
24.			*.660										.199		.197		
25.	.337	.200		.173	.212					.288	.170				.450	-.177	
26.										*.779							
27.																*.825	
28.			.199		.278	-.208	.295		.228		.189	.204					*.458

THE ROTATED FACTOR MATRIX, Continued

	Factor															
Item	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
29.	.466		-.283			.299					.261	.192			.255		.171
30.	.337							.230	.267	-.306			*.407	.207	.253		
31.	.355						*.466				.241	-.247	.178		.249		
32.	.256		.219						.299	.218	.261				.317		
33.	.525	-.178						.167	.251		.400			.222	.232		
34.	*.704		.362														
35.	*.766													.167			
36.	.192		*.556			-.166		.320		.186							
37.	*.619							.190				.254		.271			
38.	.478	.216			.189			*.420		-.204			.167	.269			.189
39.	.182							.171						*.766			
40.				*.801				.179								.174	
41.	.557	.186			.356						.174	.172					
42.	.291		.227							-.224	.186		.193		*.509	.236	.242
43.	.411									-.223		-.202		*.272	.275	.218	*.448
44.	.510							.258	.360		.264				.289		
45.	.292									.201	.225		.191		.464	*-.239	
46.				.268							*.716						
47.					*.685	.172		.273								.166	
48.	.336				*.430	-.227			.180		.234		-.273	.269			
49.	.238		.256					*.510			.383				.239		
50.	.459							.190			*.543						
51.			.336					.191		*-.313	.291	*.354	-.217		.253	.219	

Note: Only items loading .165 or greater are listed.
*One of the highest three loadings on a factor.

VITA

Henry Wilson Morrow

Candidate for the Degree of

Doctor of Education

Thesis: SIXTH-GRADE STUDENTS' ATTITUDES TOWARD SCHOOL FROM AN OPEN-SPACE AND A TRADITIONALLY DESIGNED SCHOOL

Major Field: Educational Psychology

Biographical:

Personal Data: Born in Harrisburg, Pennsylvania, March 18, 1943, the son of Mr. and Mrs. Harold M. Morrow.

Education: Graduated from Bellaire High School, Bellaire, Texas, in June, 1961; received the Bachelor of Arts degree from North Texas State University in January, 1966, with a major in Psychology; received the Master of Science degree from North Texas State University in August, 1966, with a major in Clinical Psychology; completed the requirements for the Doctor of Education degree at Oklahoma State University in July, 1972.

Professional Experience: School Psychologist, Abilene Public Schools, Abilene, Texas, 1966-1969; Graduate Teaching Assistant in Educational Psychology, Oklahoma State University, 1969-1971; School Psychologist Intern, Bi-State Mental Health Foundation, Ponca City, Oklahoma, 1971-1972; appointed a consultant to Pupil Appraisal with the Region III Education Service Center, Victoria, Texas, August, 1972.

Professional Memberships: American Psychological Association (associate), Southwest Psychological Association, Texas Psychological Association, American Educational Research Association.