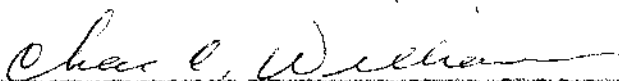


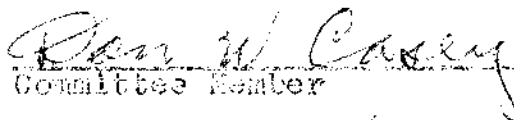
AN INVESTIGATION OF THE EFFECTS OF FOUR MIDDLE SCHOOL PROGRAMS  
UPON ACADEMIC ACHIEVEMENT AND PERSONAL ADJUSTMENT  
OF EIGHTH GRADE STUDENTS

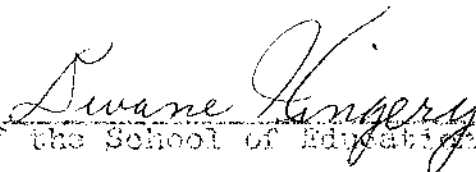
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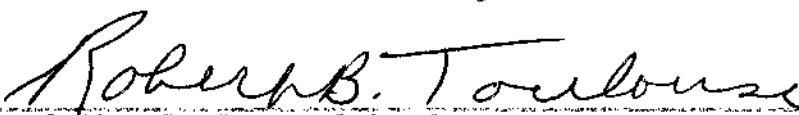
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Gaskill, Lynn Dale, An Investigation of the Effects of Four Middle School Programs Upon Academic Achievement and Personal Adjustment of Eighth Grade Students. Doctor of Education (Administrative Leadership), August, 1971, 88 pp., 39 tables, bibliography, 37 titles.

The three basic purposes of this study were (1) to determine relationships existing between academic achievement in middle schools and academic achievement in traditional junior high schools, (2) to determine the relationships existing between personal adjustment in middle schools and personal adjustment in traditional junior high schools, and (3) to determine the relationships between academic achievement and personal adjustment in both middle schools and traditional junior high schools.

The subjects for the academic achievement portion of the study were 1227 eighth grade students in six intermediate schools in the public school system of a large southwestern city. The experimental subjects were 846 students from four 6-7-8 schools operating under the middle school concept of organization. The control subjects were 381 students from two traditional 7-8-9 junior high schools. The experimental subjects had been in a middle school organization for one year and three months. The pre-test and post-test were the Iowa

Tests of Basic Skills. There were fifteen areas of academic achievement investigated.

The experimental subjects for the personal adjustment section were 441 eighth grade students in two middle schools. The control subjects were 363 eighth graders in two junior highs. The seven personal adjustment areas were from the Personal Adjustment section of the California Test of Personality. The test was administered to the matched groups after the experimental subjects had been in the middle school concept form of organization for one year and seven months.

The differences in mean gain in the academic achievement section of the study were not statistically significant in seven of the fifteen areas. These were: Vocabulary, Reading Comprehension, Spelling, Map Reading, Reading Graphs and Tables, Total Work-Study Skills, and Composite Score. Four areas were significantly different in favor of the traditional junior high group at the .01 level. These were: Capitalization, Total Language Usage, Knowledge and Use of Reference Materials, and Arithmetic Problem Solving. Four areas were significant in favor of the traditional junior high group at the .001 level. These were: Punctuation, Language Usage, Arithmetic Concepts, and Total Arithmetic Skills.

Of the seven areas of personal adjustment measured none of the mean differences were significant. The  $\bar{g}$  for middle school composite academic achievement and total personal

adjustment was .2596 at the .001 level of significance. The r for the junior high group was .3024 at the .001 level.

The major conclusions that seem to be justified by the findings of the study are:

1. The traditional junior high school programs appear to be superior to the middle school programs operating under forms of the middle school concept in particular areas of academic achievement as measured by instruments in this study.

2. There seems to be no difference in personal adjustment of eighth grade students in 6-7-8 middle schools as compared to 7-8-9 middle schools.

3. There is a significant, low positive correlation between academic achievement and personal adjustment of eighth grade students in both middle schools and junior high schools.

The middle schools in this study were initiating practices consistent with the theme of the middle school concept of organization. There are indications that initial disruptions experienced in the evolution of innovative techniques could affect beginning programs. It is recommended that further research be initiated to study effects over a longer period of time of established middle school programs.

AN INVESTIGATION OF THE EFFECTS OF FOUR MIDDLE SCHOOL PROGRAMS  
UPON ACADEMIC ACHIEVEMENT AND PERSONAL ADJUSTMENT  
OF EIGHTH GRADE STUDENTS

DISSERTATION

Presented to the Graduate Council of the  
North Texas State University in Partial  
Fulfillment of the Requirements

For the Degree of

DOCTOR OF EDUCATION

By

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Denton, Texas

August, 1971

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## CHAPTER I

### INTRODUCTION

Public school organization is in the early stages of a change similar in magnitude to that of the junior high school movement during the early part of this century. The middle school movement is a major topic of concern in the literature, at conferences, and wherever school administrators gather.

In a survey by NEA's Educational Research Service (2) during the school year 1963-64 of school districts with more than 12,000 students, only 5 of 344 school systems operated a 5-3-4 or 4-4-4 plan of organization. The same type of survey made of 449 districts of this size during the 1968-69 school year revealed 19 systems this size operating such schools (8). The most impressive finding of the latter survey was that 65 other large school districts were contemplating the change to a middle school organization.

Numerous reasons have been given for this reorganization. In some districts it has helped to meet the needs or demands for integration (3, 6). In particular areas of the nation the addition of the kindergarten to public school housing

problems has sparked some rearrangement. In one state the addition of the sixth grade to the secondary school provides for more state funds (5). The middle school reorganization in some districts has served to meet the needs of a particular local population profile.

Regardless of the reasons for the changes made or contemplated, the major emphasis should continue to be the effect upon boys and girls. Austin (1) found the traditional (6-3-3) school superior to the middle school (5-3-4) in academic achievement gain. Although a parent's questionnaire revealed a preference for the 5-3-4 school plan, Austin found no significant differences on ten student adjustment variables. In a study of the effects of the 5-3-4 school upon sixth grade students, Shovlin found no significant differences among the academic variables. In the analysis of his environmental findings he states, "The middle school, which appears to accelerate social behavior, only serves to compound the resulting problems" (7, p. 3441).

Just as did the junior high school advocates at the beginning of this century, the middle school proponents point to the dissatisfaction with the existing system. In a study of students in grades five through ten, Dacus (4), using measures in the areas of social maturity, emotional maturity, physical maturity, and a sociometric device, found that students in grades six and seven in the lower grades

and nine and ten in the upper grades were most similar. These are the points at which the traditional junior high school divides them. Dacus also found that the greatest dissimilarity in these four maturational trait areas was between grades eight and nine. By separating these two grade levels the 5-3-4 school would seem to have an effect upon the eighth grade students.

By placing the ninth grade in the high school the intermediate unit has been freed from the scheduling limitations imposed by Carnegie unit requirements. This lifts one of the biggest obstacles to flexibility of the school program for maximum learning effectiveness. With the resulting flexible, modular scheduling, individual study times, more freedom of movement and greater participation in planning the school program by the teachers and students, it would seem that there would be a more wholesome perception by the learner of his role in this new school setting.

#### Statement of the Problem

The problem was an investigation of significant relationships existing between the academic achievement and personal adjustment of eighth grade students in four middle schools and two traditional junior high schools.

### Statement of Purpose

The three basic purposes of the study were (1) to determine relationships existing between academic achievement in middle schools and academic achievement in traditional junior high schools, (2) to determine the relationships existing between personal adjustment in middle schools and personal adjustment in traditional junior high schools, and (3) to determine the relationships between academic achievement and personal adjustment in both middle schools and traditional junior high schools.

### Hypotheses

For investigation purposes hypotheses were stated in the null form.

Hypotheses relating to academic achievement were stated as follows:

1. There will be no significant difference between the mean gain of Vocabulary scores of eighth grade students in middle schools and traditional junior high schools.
2. There will be no significant difference between the mean gain of Reading Comprehension scores of eighth grade students in middle schools and traditional junior high schools.
3. There will be no significant difference between the mean gain of Spelling scores of eighth grade

students in middle schools and traditional junior high schools.

4. There will be no significant difference between the mean gain of Capitalization scores of eighth grade students in middle schools and traditional junior high schools.
5. There will be no significant difference between the mean gain of Punctuation scores of eighth grade students in middle schools and traditional junior high schools.
6. There will be no significant difference between the mean gain of Language Usage scores of eighth grade students in middle schools and traditional junior high schools.
7. There will be no significant difference between the mean gain of Total Language Skills scores of eighth grade students in middle schools and traditional junior high schools.
8. There will be no significant difference between the mean gain of Map Reading scores of eighth grade students in middle schools and traditional junior high schools.
9. There will be no significant difference between the mean gain of Reading Graphs and Tables scores of eighth grade students in middle schools and traditional junior high schools.

10. There will be no significant difference between the mean gain of Knowledge and Use of Reference Materials scores of eighth grade students in middle schools and traditional junior high schools.
11. There will be no significant difference between the mean gain of Total Work-Study Skills scores of eighth grade students in middle schools and traditional junior high schools.
12. There will be no significant difference between the mean gain of Arithmetic Concepts scores of eighth grade students in middle schools and traditional junior high schools.
13. There will be no significant difference between the mean gain of Arithmetic Problem Solving scores of eighth grade students in middle schools and traditional junior high schools.
14. There will be no significant difference between the mean gain of Total Arithmetic Skills scores of eighth grade students in middle schools and traditional junior high schools.
15. There will be no significant difference between the mean gain of Composite scores of eighth grade students in middle schools and traditional junior high schools.



Hypotheses relating to personal adjustment were stated as follows:

16. There will be no significant difference between the mean Self-Reliance scores of eighth grade students in middle schools and traditional junior high schools.
17. There will be no significant difference between the mean Sense of Personal Worth scores of eighth grade students in middle schools and traditional junior high schools.
18. There will be no significant difference between the mean Sense of Personal Freedom scores of eighth grade students in middle schools and traditional junior high schools.
19. There will be no significant difference between the mean Feeling of Belonging scores of eighth grade students in middle schools and traditional junior high schools.
20. There will be no significant difference between the mean Withdrawing Tendencies scores of eighth grade students in middle schools and traditional junior high schools.
21. There will be no significant difference between the mean Nervous Symptoms scores of eighth grade students in middle schools and traditional junior high schools.

22. There will be no significant difference between the mean Total Personal Adjustment scores of eighth grade students in middle schools and traditional junior high schools.

Hypotheses pertaining to interrelationships between academic achievement and personal adjustment were stated as follows:

23. There will be no significant correlation between the mean Composite scores of academic achievement and the mean Total Personal Adjustment scores of eighth grade students in middle schools.
24. There will be no significant correlation between the mean Composite scores of academic achievement and the mean Total Personal Adjustment scores of eighth grade students in traditional junior high schools.

#### Definitions of Terms

1. Middle School.--An intermediate unit of school organization which includes the sixth, seventh, and eighth grades. The middle schools in this study are part of a 5-3-4 form of organization.

2. Middle School Concept.--An approach to the improvement of school organization in the intermediate unit in order to more nearly meet individualized scheduling requirements through flexible modular scheduling, team teaching, large

group instruction, small group discussion, and independent study.

3. Traditional Junior High School.--The intermediate unit of a 6-3-3 plan of school organization which includes the seventh, eighth, and ninth grades. The daily schedule includes six periods of fifty-five minutes throughout the week. Students are basically under the supervision of one particular teacher each period of the day.

#### Limitations of the Study

This study was limited to eighth grade students who had been in regular attendance in either a middle school environment operating under a "middle school concept" of organization or a "traditional" junior high school for two years.

#### Procedures for Collecting Data

The experimental subjects were 846 eighth grade students who had been in regular attendance in one of four middle schools in a large Southwestern city school system. Within a three year period this school system changed from a 6-3-3 organization to a K5-3-4 plan of operation. Because of delay in construction of additions to a high school it was necessary for two 7-8-9 junior high schools in that attendance area to remain in their original organization until two years after the initial movement to 6-7-8 middle schools.

The control subjects were 381 eighth grade students who had been in regular attendance at one of these two traditional junior high schools.

Only those students who were present during all of the testing sessions were included in the study. Only those students who had been in regular attendance without withdrawals or reentries for the two and one-half year period were included.

The pre-test of academic achievement was the Iowa Tests of Basic Skills, which was administered during October of the sixth grade year. The post-test of academic achievement was the Iowa Tests of Basic Skills, which was completed in December of the eighth grade year. Fifteen scores from the pre-test were secured from the permanent record folder in each school. These same fifteen scores on the post-test were available on data processing print-outs. These academic achievement scores were: Vocabulary, Reading Comprehension, Spelling, Capitalization, Punctuation, Language Usage, Total Language Skills, Map Reading, Reading Graphs and Tables, Knowledge and Use of Reference Materials, Total Work-Study Skills, Arithmetic Concepts, Arithmetic Problem Solving, Total Arithmetic Skills, and the Composite Score.

Because a pre-measure of personal adjustment was not available for this study, the two junior high schools were matched with two middle schools considering the variables

which most affect personal adjustment. The personal adjustment measure was the Personal Adjustment section of the California Test of Personality. This measure was administered in April of the eighth grade year to the entire eighth grade of all four schools. At this time the experimental subjects had experienced more than one year and seven months in a middle school environment.

Seven scores from each subject were tabulated for treatment. These included Self-Reliance, Sense of Personal Worth, Sense of Personal Freedom, Feeling of Belonging, Withdrawing Tendencies, Nervous Symptoms, and the Total Personal Adjustment score.

#### Procedures for Treating Data

Because the four middle schools that housed the experimental subjects and the two junior high schools that remained for control purposes were different in size, socio-economic conditions, culture, physical facilities, and other variables which could not be experimentally controlled, the analysis of covariance statistical technique was used to test hypotheses one through fifteen. The significance level of  $P = .05$  was required for rejection of the null hypothesis for all computations.

The personal adjustment measure was a measurement at one time point design comparing two junior high schools which had been equated with two middle schools on the basis

of factors affecting personal adjustment. The Fisher's t statistical technique was used to test hypotheses sixteen through twenty-two.

Pearson's Product Moment Coefficient of Correlation was used to test hypotheses twenty-three and twenty-four, the relationship between personal adjustment and academic achievement.

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## CHAPTER II

### SURVEY OF RELATED LITERATURE

#### Introduction

A review of the literature reveals a mass of speculative theory regarding the effects of various forms of middle school organizations. Literature pertaining to the effects of schools operating under different forms of the "middle school concept" began appearing in volume after 1965, steadily increasing in intensity. However, there has been an absence of empirical studies to correspond with this concern. A review of the findings of studies that have been done reveals a definite conflict.

This chapter will include a discussion of (1) Trends in school organization, (2) Administrative considerations, and (3) Literature pertaining to academic achievement and personal adjustment in middle school and traditional settings.

#### Trends in School Organization

In one of the earlier surveys, Cuff (5) defined middle schools as including grades six and seven and not extending below grade four or above grade eight. In replies from 29 states he found 499 middle schools operating in 446 public school districts during the school year 1965-66.



Using the same definition in a similar survey in 1968, Hunt, Berg, and Doyle (12) identified 1146 middle schools in 38 states responding.

In 1965, Woodring (25) stated that the traditional 6-3-3 administrative plan with the junior high school was on the way out. In 1969, William Alexander (1, p. 356) stated that his 1967-68 survey, "very clearly confirmed that there is indeed a nationwide movement toward new school organizations in the middle of the school ladder." This survey revealed a total of 1101 schools in 37 of the 50 states, more than twice that identified by Cuff's 1965-66 survey. Of a random sample of ten per cent of these schools studied more intensively, 42.9 per cent were established in 1966 and 1967. The American Association of School Administrators' survey in 1963-64 (4) and 1963-69 (28) concentrated upon school systems enrolling more than 12,000 students. The trend cited earlier was clearly substantiated here, also. Although 19 systems of 449 this size were already operating either 5-3-4 or 4-4-4 schools, the most impressive finding of the latter survey was that 65 large school districts were contemplating the change to a middle school organization.

#### Administrative Considerations

The design of new school facilities and the redesign of existing ones in order to meet the physical requirements

for the middle school concept require long-range planning and the expenditure of millions of tax dollars. The wise administrator is not only satisfying physical demands but examining the effects of environmental changes on the transescent. By removing the scheduling limitations of the ninth grade Carnegie unit requirements, middle school administrators have lifted one of the greatest obstacles to the flexibility of environmental controls for maximum learning effectiveness. Flexible modular scheduling, independent study, team teaching, and a new approach to curriculum because of the reorganization of time schedules for both teachers and students would seem to have an effect upon the student's perception of the school and his role in it.

The 1959 statement on "Recommended Grade Organization for Junior High School Education" by the Committee on Junior High School Education of the National Association of Secondary School Principals stated,

We believe that youth in the early adolescent years are the ones who are most affected by different types of grade organization. Therefore, the particular kind of grade organization which provides the best educational program for early adolescents should receive serious consideration (27, p. 40).

In summarizing, they recommended that an intermediate unit including grades 7, 8, and 9 was the best type of grade organization for the most effective educational program of early adolescents.

The same prestigious group released a statement in 1967 entitled "Recommended Grades or Years in Junior High or Middle Schools" (26). The committee acknowledges here that physiological and sociological changes seem to have occurred since the origination of the 7-8-9 junior high school. However, they are more willing to include the sixth grade in the intermediate unit than to exclude the ninth grade. They state that they do not believe that the ninth graders are ready for the activities of the usual senior high school. The committee declares that "Anyone contemplating a grade combination other than 7-9 needs to have compelling reasons for making the change" (26, p. 69). Dr. J. Lloyd Trump, a member of that committee and Associate Secretary of the National Association of Secondary School Principals, states that there should be more emphasis on program than on organization and says that the committee report "places the burden of proof on those who advocate a structure different from today's common 7-9 school" (24, p. 71).

With the intensified movement toward 5-3-4 or 4-4-4 organizations being publicized as the "modern thing to do" the aforementioned "burden of proof" seems to be moving to the justification for remaining in the 7-8-9 organization while being surrounded by change.

Literature Pertaining to Academic Achievement  
and Personal Adjustment

An appraisal of the literature concerning the effects of the middle school concept upon the early adolescent would not likely calm the troubled administrator who faces the decision to change his school district's grade organization. A decision to alter the grades contained in the intermediate school usually affects every school in the district. Considering the significance of this decision the decision-maker needs all of the information possible. Since 1965 there has been a flood of opinionated articles either praising or attacking the evolution of middle schools. Only recently have there been sufficient empirical investigations which could help in the decisions. These studies show a definite conflict.

Rankin (17) studied the effects of a middle school rearrangement upon the attitudes and academic achievement of 1900 students in grades five through ten. The school district under study for two years was in a 6-3-3 arrangement during the first year and a 5-3-4 organization the second year. He concluded,

Although similarities outnumbered differences, the results of this study tend to demonstrate that attitudes of students were healthier under the middle school arrangement of grades than they were under the junior high arrangement (17, p. 190).

Even though a conclusive statement could not be drawn from the academic achievement data, the middle school tended to

produce higher results with twenty-four significantly higher mean scores on the achievement measures as opposed to nine significantly lower.

In a comparison of the middle schools and junior high schools in the state of Maryland, Forst (10, p. 151) stated "There has been a new, definitive educational movement in the state." He found that socialization in the middle school is generally more a part of the school day than in the junior high school. His survey revealed that grades five and nine are not considered appropriate for the intermediate school. It was noted that the middle school is neither elementary nor secondary; therefore, a curriculum and program of activities suitable for this age group must be developed and implemented.

In a study of the effects of a change from a traditional school setting to a child-centered middle school with team teaching, flexible scheduling, and individualized educational programs, Stephens (19), using fifth and sixth grade subjects, concluded: (1) Perceived academic adequacies were found to change significantly in both fifth and sixth grade students after the change in curriculum. (2) The experimental program with its emphasis on individualized learning, pupil autonomy and flexibility appeared to have merit in its influence upon the child's concept of himself in relation to interpersonal adequacy, academic adequacy, and total self-concept for sixth grade students and for fifth grade students' academic

adequacy. (3) This study found no evidence that abrupt change in educational environment creates a negative modification in the factors which make up the self-concept.

Using the parallel-group experimental method, Moran (16) investigated the effects of a middle school program upon the academic achievement and attitudes of 298 students in the sixth grade. He concluded that the performance of the experimental group in English, arithmetic, social studies, and science was better while the traditional approach to reading achievement was more effective for all three ability levels that he used for his subjects. The experimental program, operating under the middle school concept, led to greater academic accomplishment for slow learners. For the high ability students there was a statistically significant positive change in social and behavioral attitudes. The teaching staff observed that the experimental group made far greater use of the library and the multi-media center.

In a study of the effects of middle school organizations upon transescent male development, Fallon (9) found little difference. He concentrated upon general self-concept and self-reported personal and social problems of sixth and seventh grade boys in 7-8-9 junior high schools versus those in 6-7-8-9 middle school settings. He found few dissimilarities and no statistical differences among 297 boys in two

New York counties. He did not describe any other school differences other than grade organization. Although not statistically significant, he found:

Health and physical development, peer group and self-centered concerns were slightly less a social-personal problem among the middle school sixth grade boys than among the conventional school sixth grade boys (9, p. 110).

The presence of the ninth grade would seem to have an effect upon the findings in this particular study.

In a comparison of five Pennsylvania middle schools and five junior high schools, Tobin (23) found no significant differences in student problems and personality between middle and junior high school students. Although he found more innovations in the middle schools he concluded that differences in adjustment do not exist.

Duncan (8) found that teachers in three secondary schools with flexible scheduling generally agreed that student achievement improved, that they had more individual contacts with students and that the teaching-learning process was more rewarding even though there were more exhaustive demands upon the teacher's time. He concluded that flexible scheduling brought about a changing role of the teacher, emphasizing the teacher as a director of learning. Possibly the most important conclusion was that students will assume more of the responsibility for their learning under flexible scheduling.

Although there is sometimes initial resistance to the introduction of flexible scheduling, Beggs (3) found that after one year in eleven such schools, resistance diminished. He concluded that this type of organization for individualization of instruction stimulated changes in the methods of instruction which teachers employ. Principals who had at least three years of experience with this form of organization were positive in their evaluation of the performance of teachers and the accomplishments of students working in the flexible schedule. Kimble (14) found that teachers do perform differently in their classrooms in schools of different grade organizations. He found a definite relationship between teacher behavior in the classroom and the school grade organization.

In a comparison of sixth grade students in self-contained elementary schools versus those in 6-7-8 middle schools Glissmeyer (11) found no significant difference in academic achievement at any of the three intelligence levels. However, the middle schools in this study had limited flexibility in their schedules. Although all null hypotheses were accepted, a sixth grade teacher questionnaire indicated that the majority of the teachers were favorably impressed with the middle school arrangement.

In Austin's (2) study of the effects of middle schools upon pupil achievement and school adjustment, only a comparison



of 6-3-3 and 5-3-4 grade organizations were made. No mention was made of other practices consistent with the current theme of the "middle school concept." The differences in achievement favored the 6-3-3 control group. In focusing upon the tenth grade students who had come from both types of grade organizations he found no significant differences in attendance, dropout rate, and cocurricular participation. There was a significant difference in responses by parents in favor of the experimental program which indicated that, in their opinion, the 5-3-4 program was superior in all categories.

In an investigation of the effects of team teaching, large group and small group instruction with sixth grade students, Sterns (20) found that gains in mental maturity, language achievement, personal adjustment, and social adjustment were greater for the control group than for the experimental group. A greater percentage of students expressed more positive attitudes toward homeroom teachers than toward team teachers. There were significant differences in the school relationships of sixth graders which favored the control group. However, the sample for this study was so small that its credibility would seem to be limited. Jennings (13) investigated effects of core programs which emphasized student-teacher cooperation in planning and learning upon students in seventh, eighth, and ninth grades. He found no significant difference

between measures of student self-concept and the type of core class that the students experienced or between measures of student self-concept and the teaching methods employed in the classes. In this study the core program lasted only two hours each day. The remainder of the day the students were in regular teacher-directed environments. Perhaps the findings would have been different if the students had experienced more contact with individualized scheduling and a consistent voice in directing their own learning activities.

One of the most criticized programs of the middle school concept is that of independent study. Many teachers in teacher-directed, traditionally scheduled schools charge that intermediate-school-age students are not mature enough to direct their own learning in independent study arrangements. Smith (18) and Sudyk (21) both found that ninth grade students in flexibly scheduled schools with 25 to 35 per cent of the time devoted to independent study could be encouraged to spend a significantly greater amount of their unscheduled time in school-work-oriented areas through model-reinforcement and model counseling.

It seems that many school administrators are talking about flexible scheduling and few are doing anything about it. In a survey in California of the use of unusual time modules for secondary scheduling, Thayer (22) found that although 880 principals showed a high degree of interest in

schedule experimentation only about 10 per cent were using unusual time modules. An overwhelming majority of the students and teachers interviewed in those schools were enthusiastic about their unusual schedules. A survey of the literature impresses one not so much with the movement toward middle school organization made already but the magnitude of the movement being contemplated.

In an appraisal of administrative perception of middle school programs in New York State, Curtis (6) found that most principals of middle schools felt that students were more compatible in grades six, seven, and eight because of similar social, emotional, and physical problems. Most felt that seventh and eighth grade students were relieved of the domination of ninth graders. They expressed feelings similar to the empirical findings of Dacus (7), which noted the existence of a dramatic difference between students in grades eight and nine.

#### Summary

There has been a definitely observable trend toward middle school organization since 1965. There is evidence that many large school districts are studying the possibility of making this change. The organizational change usually affects every campus within the school district. Because of the magnitude of the decision, administrators are looking for evidence to support the move.

In a survey of empirical research done thus far, one finds a definite conflict. Many of the studies have been done in small school districts. Conclusive findings are not available which would provide security to the administrator of a large school system who faces the decision to rearrange his school district's grade organization.

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## CHAPTER III

### METHOD AND PROCEDURES

#### Description of Subjects

Subjects for the academic achievement portion of this study were 1227 eighth grade students in six intermediate schools in the public school system of a large Southwestern city. The experimental subjects were 846 students comprising the entire membership of the eighth grade in four 6-7-8 middle schools. The membership of two 7-8-9 junior high school eighth grades provided the 381 control subjects. All of the eighth grade students in the six schools who were present during each of the test administrations and had been enrolled continuously in their particular school were included in the study. These 1227 subjects provided the data for hypotheses one through fifteen and twenty-three and twenty-four.

Subjects for the personal adjustment portion of this study were 804 eighth grade students in four of these six schools. The experimental subjects were 441 students comprising the eighth grade membership in two of the four 6-7-8 middle schools used for the academic achievement portion. The control subjects were 363 students comprising the membership of the eighth grade in the two 7-8-9 junior



high schools. All of the eighth grade students in these four schools who were present during all test administrations and had been enrolled continuously during the time span of the study were included. These 804 subjects provided the data for hypotheses sixteen through twenty-four.

The district-wide transition to a middle school plan of organization was scheduled over a three year period. The four original middle schools, containing the experimental subjects, began the movement in the fall of 1968. At this time the subjects were seventh grade students. In the absence of the Carnegie unit requirements the program of the middle schools provided flexible modular scheduling, independent study time, team-teaching, multi-subject exploration, and cooperative planning.

Because of delays in the construction of facilities the movement of two 7-8-9 junior high schools to a 6-7-8 middle school organization provided conditions for choosing control subjects for the study. The program of the junior high schools provided six fifty-five minute periods per day with one teacher per subject. There was no flexibility in the schedule. Both of the schools provided a traditionally scheduled junior high curriculum.

#### Description of Instruments

The measures of academic achievement were the Iowa Tests of Basic Skills, Multi-Level Edition, Form 3. These

Iowa Tests are designed to measure generalized intellectual skills and abilities rather than the acquisition of specific information in special subjects (1). More than 12,000 individual items were tried out in 400 schools to construct the present four forms of the tests. Annually 300,000 students in over 800 school systems participate in a cooperative program to validate the criteria. Tests include the following:

- Test V: Vocabulary
- Test R: Reading Comprehension
- Test L: Language Skills
  - L-1: Spelling
  - L-2: Capitalization
  - L-3: Punctuation
  - L-4: Usage
- Test W: Work-Study Skills
  - W-1: Map Reading
  - W-2: Reading Graphs and Tables
  - W-3: Knowledge and Use of Reference Materials
- Test A: Arithmetic Skills
  - A-1: Arithmetic Concepts
  - A-2: Arithmetic Problem Solving

The mean gain was determined for each of the categories and sub-tests listed above and also for Total Language Skills, Total Work-Study Skills, Total Arithmetic Skills, and the Composite Score. There were fifteen areas of the academic achievement measure which were used in the study.

The California Test of Personality is one of the most highly respected instruments of its type. It is often used to validate similar instruments. The Manual (3) states that scores of studies testify to its value as an instrument of research. The Bureau's Sixth Mental Measurements Yearbook (2) lists 166 studies through 1963. It is divided into two general areas of two sections each. These are "names for groupings of more or less specific tendencies to feel, think and act" (3, p. 3). Those sections under Personal Adjustment are:

- 1A. SELF-RELIANCE - An individual may be said to be self-reliant when his overt actions indicate that he can do things independently of others, depend upon himself in various situations, and direct his own activities. The self-reliant person is also characteristically stable emotionally, and responsible in his behavior.
- 1B. SENSE OF PERSONAL WORTH - An individual possesses a sense of being worthy when he feels he is well regarded by others, when he feels that others have faith in his future success, and when he believes that he has average or better than average ability. To feel worthy means to feel capable and reasonably attractive.
- 1C. SENSE OF PERSONAL FREEDOM - An individual enjoys a sense of freedom when he is permitted to have a reasonable share in the determination of his conduct and in setting the general policies that shall govern his life. Desirable freedom includes permission to choose one's own friends and to have at least a little spending money.
- 1D. FEELING OF BELONGING - An individual feels that he belongs when he enjoys the love of his family, the well-wishes of good friends, and a cordial relationship with people in general. Such a person will as a rule get along well with his

teachers or employers and usually feels proud of his school or place of business.

- 1E. WITHDRAWING TENDENCIES - The individual who is said to withdraw is the one who substitutes the joys of a fantasy world for actual successes in real life. Such a person is characteristically sensitive, lonely, and given to self-concern. Normal adjustment is characterized by reasonable freedom from these tendencies.
- 1F. NERVOUS SYMPTOMS - The individual who is classified as having nervous symptoms is the one who suffers from one or more of a variety of physical symptoms such as loss of appetite, frequent eye strain, inability to sleep, or a tendency to be chronically tired. People of this kind may be exhibiting physical expressions of emotional conflicts.

For the purposes of this research the scores for each of these six areas were used as well as the Total Personal Adjustment score.

#### Procedures for Collecting Data

The pre-test of academic achievement was administered to the subjects in mid-October of their sixth grade year. The instrument was the Iowa Tests of Basic Skills. The administration of the tests was by the local school under instructions from the Research Department of the school district. These scores were secured from the individual permanent record folders on file in each of the six schools.

The post-test of academic achievement was administered to the subjects in the last week of November of the eighth grade year. The Iowa Tests of Basic Skills was administered

by the counselors of each of the six schools under the standard instructions of the Research Department of the school district. These scores were secured from data processing print-outs available for each of the six schools.

Those students who had not been enrolled continuously in their particular middle school or junior high school for the span of the study were eliminated. The time period of the exposure of the experimental subjects to the "middle school concept" was one year and three months.

The 1227 subjects in this part of the study provided data for hypotheses one through fifteen and twenty-three and twenty-four.

The personal adjustment portion of the study involved the two 7-8-9 traditionally scheduled junior high schools and two of the four 6-7-8 middle schools. These schools were matched for this portion of the study because only one test was administered. In order to choose the schools most similar in variables affecting personal adjustment scores conferences were held with the school system's Research Council, a six member committee composed of central office personnel, an assistant superintendent, and the Director of Research. Conferences were also scheduled with local school principals and counselors. The "School and Community" sections of the Southern Association of Colleges and Secondary Schools evaluation visits to the school district's secondary

schools were secured from central office files and compared. The dwelling area was analyzed through personal observation and use of a city map. Each community was judged to be very similar to the other in socio-economic and cultural configuration. Pre-test academic achievement total scores indicated a distinct similarity between these two 7-8-9 junior high schools and two 6-7-8 middle schools.

The Personal Adjustment section of the California Test of Personality, Intermediate Level, Form 3 was administered during one morning administration in the school cafeteria under identical instructions and similar conditions in each school. The administration was under the direction of the same individual in each of the four schools with assistance of the local counseling staff, teachers, and administration. Answer sheets were coded and sent to the California Test Bureau for scoring and tabulation. The period of time covered by the personal adjustment portion of the study was one year, seven months, and two weeks. Students who had not been enrolled continuously in their particular school during this time were excluded from the study.

The 804 subjects in this part of the study provided the data for hypotheses sixteen through twenty-four.

#### Procedures for Treating Data

Data required for testing the hypotheses were submitted to the Computer Center at North Texas State University. The

fifteen scores on the pre-test of academic achievement and the fifteen scores on the post-test were prepared on punched cards. The analysis of covariance statistical technique was used to test hypotheses one through fifteen. The significance level of  $P = .05$  was required for rejection of the null hypothesis for all computations.

The personal adjustment measure compared two junior high schools which had been equated with two middle schools on the basis of factors affecting personal adjustment. The seven personal adjustment scores were prepared on punched cards. The Fisher's  $t$  statistical technique was used to test hypotheses sixteen through twenty-two.

Pearson's Product Moment Coefficient of Correlation was used to test hypotheses twenty-three and twenty-four, the relationship between personal adjustment and academic achievement.

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## CHAPTER IV

### PRESENTATION AND ANALYSIS OF DATA

This chapter contains the presentation and analysis of data. The data are presented according to the factors considered in the study relating to academic achievement in the areas of Vocabulary, Reading Comprehension, Spelling, Capitalization, Punctuation, Language Usage, Total Language Skills, Map Reading, Reading Graphs and Tables, Knowledge and Use of Reference Materials, Total Work-Study Skills, Arithmetic Concepts, Arithmetic Problem Solving, Total Arithmetic, and Composite Scores. Data are also presented in the personal adjustment areas of Self-Reliance, Sense of Personal Worth, Sense of Personal Freedom, Feeling of Belonging, Withdrawing Tendencies, and Nervous Symptoms. Comparisons are made according to groupings presented in Chapter III. In addition Composite Academic Achievement scores and Total Personal Adjustment scores are correlated.

In order to establish the significance of the various hypotheses, the raw data were subjected to statistical analysis based upon the null hypotheses.

#### Analysis of Academic Achievement Measures

It was predicted that there would be no significant difference between the scores on a measure of Vocabulary

made by eighth grade students after one year in a middle school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 1 was tested by comparing the corrected posttest means on the Vocabulary section of the Iowa Tests of Basic Skills through a test of significance using the analysis of covariance. The Vocabulary means and standard deviations are shown in Table I.

TABLE I  
VOCABULARY MEANS AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	6.63	1.41	8.55	1.65	8.06
Middle Schools	846	5.86	1.55	7.70	1.89	7.92

The mean of the pretest for the junior high school group was 6.63, with a standard deviation of 1.41, and the posttest mean was 8.55, with a standard deviation of 1.65. The middle school group had a pretest mean of 5.86, with a standard deviation of 1.55, and a posttest mean of 7.70, with a standard deviation of 1.89. The adjusted mean for the junior high school group was 8.06, and the adjusted mean for the middle school group was 7.92. Comparison of

the F ratio in Table II with table values for significant levels revealed that 3.5453 with 1 and 1224 degrees of freedom was not significant. Hypothesis 1 was therefore accepted. Results of this test can be found in Table II.

TABLE II

ANALYSIS OF COVARIANCE OF VOCABULARY OF EIGHTH GRADE STUDENTS IN MIDDLE SCHOOL ORGANIZATIONS AND JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	4.6714	1	4.6714	3.5453	N.S.
Within Groups	1612.7878	1224	1.3176		
Total	1617.4592	1225			

It was predicted that there would be no significant difference between the scores on a measure of Reading Comprehension made by eighth grade students after one year in a middle school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 2 was tested by comparing the corrected post-test means on the Reading Comprehension section of the Iowa Tests of Basic Skills through a test of significance using the analysis of covariance. The Reading Comprehension means and standard deviations are shown in Table III.

TABLE III  
 READING COMPREHENSION MEANS AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	6.41	1.41	8.10	1.65	7.65
Middle Schools	846	5.72	1.45	7.40	1.82	7.60

The mean of the pretest for the junior high school group was 6.41, with a standard deviation of 1.41, and the posttest mean was 8.10, with a standard deviation of 1.65. The middle school group had a pretest mean of 5.72, with a standard deviation of 1.45, and a posttest mean of 7.40, with a standard deviation of 1.82. The adjusted mean for the junior high school group was 7.65, and the adjusted mean for the middle school group was 7.60. Comparison of the F ratio in Table IV with table values for significant levels revealed that .5693 with 1 and 1224 degrees of freedom was not significant. Hypothesis 2 was therefore accepted. Results of this test can be found in Table IV.

It was predicted that there would be no significant difference between the scores on a measure of Spelling made by eighth grade students after one year in a middle school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 3 was tested by

TABLE IV

ANALYSIS OF COVARIANCE OF READING COMPREHENSION OF EIGHTH  
GRADE STUDENTS IN MIDDLE SCHOOL ORGANIZATIONS  
AND JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	.7512	1	.7512	.5693	N.S.
Within Groups	1615.2725	1224	1.3197		
Total	1616.0237	1225			

comparing the corrected posttest means on the Spelling section of the Iowa Tests of Basic Skills through a test of significance using the analysis of covariance. The Spelling means and standard deviations are shown in Table V.

TABLE V

SPELLING MEANS AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	6.49	1.76	8.30	2.05	7.95
Middle Schools	846	5.99	1.81	7.74	2.21	7.89

The mean of the pretest for the junior high school group was 6.49, with a standard deviation of 1.76, and the posttest mean was 8.30, with a standard deviation of 2.05. The middle school group had a pretest mean of 5.99, with a standard deviation of 1.81, and a posttest mean of 7.74, with a standard deviation of 2.21. The adjusted mean for the junior high school group was 7.95, and the adjusted mean for the middle school group was 7.89. Comparison of the F ratio in Table VI with table values for significant levels revealed that .4810 with 1 and 1224 degrees of freedom was not significant. Hypothesis 3 was therefore accepted.

TABLE VI

ANALYSIS OF COVARIANCE OF SPELLING OF EIGHTH GRADE STUDENTS  
IN MIDDLE SCHOOL ORGANIZATIONS AND JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	.6611	1	.6611	.4810	N.S.
Within Groups	1682.4470	1224	1.3745		
Total	1683.1082	1225			

It was predicted that there would be no significant difference between the scores on a measure of Capitalization made by eighth grade students after one year in a middle

school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 4 was tested by comparing the corrected posttest means on the Capitalization section of the Iowa Tests of Basic Skills through a test of significance using the analysis of covariance. The Capitalization means and standard deviations are shown in Table VII.

TABLE VII  
CAPITALIZATION MEANS AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	7.06	1.78	8.89	2.21	8.48
Middle Schools	846	6.44	1.86	8.01	2.32	8.19

The mean of the pretest for the junior high school group was 7.06 with a standard deviation of 1.78, and the posttest mean was 8.89, with a standard deviation of 2.21. The middle school group had a pretest mean of 6.44, with a standard deviation of 1.86, and a posttest mean of 8.01, with a standard deviation of 2.32. The adjusted mean for the junior high school group was 8.48, and the adjusted mean for the middle school group was 8.19. Comparison of the F ratio in Table VIII with table values for significant levels

revealed that 9.8989 with 1 and 1224 degrees of freedom was significant at the .01 level of confidence. Hypothesis 4 was therefore rejected.

TABLE VIII

ANALYSIS OF COVARIANCE OF CAPITALIZATION OF EIGHTH GRADE STUDENTS IN MIDDLE SCHOOL ORGANIZATIONS AND JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	22.0100	1	22.0100	9.8989	.01
Within Groups	2721.5500	1224	2.2235		
Total	2743.5601	1225			

It was predicted that there would be no significant difference between the scores on a measure of Punctuation made by eighth grade students after one year in a middle school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 5 was tested by comparing the corrected posttest means on the Punctuation section of the Iowa Tests of Basic Skills through a test of significance using the analysis of covariance. The Punctuation means and standard deviations are shown in Table IX.



TABLE IX  
PUNCTUATION MEANS AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	6.53	1.93	8.39	2.37	8.12
Middle Schools	846	6.11	1.90	7.60	2.37	7.72

The mean of the pretest for the junior high school group was 6.53, with a standard deviation of 1.93, and the posttest mean was 8.39, with a standard deviation of 2.37. The middle school group had a pretest mean of 6.11, with a standard deviation of 1.90, and a posttest mean of 7.60, with a standard deviation of 2.37. The adjusted mean for the junior high school group was 8.12, and the adjusted mean for the middle school group was 7.72. Comparison of the F ratio in

TABLE X  
ANALYSIS OF COVARIANCE OF PUNCTUATION OF EIGHTH GRADE STUDENTS IN MIDDLE SCHOOLS AND JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	41.7891	1	41.7891	16.3122	.001
Within Groups	3135.6736	1224	2.5618		
Total	3177.4626	1225			

Table X with table values for significant levels revealed that 16.3122 with 1 and 1224 degrees of freedom was significant at the .001 level. Hypothesis 5 was therefore rejected.

It was predicted that there would be no significant difference between the scores on a measure of Language Usage made by eighth grade students after one year in a middle school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 6 was tested by comparing the corrected posttest means on the Language Usage section of the Iowa Tests of Basic Skills through a test of significance using the analysis of covariance. The Language Usage means and standard deviations are shown in Table XI.

TABLE XI  
LANGUAGE USAGE MEANS AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	6.85	1.81	8.34	2.07	7.84
Middle Schools	846	5.98	1.86	7.27	2.15	7.49

The mean of the pretest for the junior high school group was 6.85, with a standard deviation of 1.81, and the posttest mean was 8.34, with a standard deviation of 2.07. The middle school group had a pretest mean of 5.98, with a

standard deviation of 1.86, and a posttest mean of 7.27, with a standard deviation of 2.15. The adjusted mean for the junior high school group was 7.84, and the adjusted mean for the middle school group was 7.49. Comparison of the F ratio in Table XII with table values for significant levels revealed that 13.8947 with 1 and 1224 degrees of freedom was significant at the .001 level. Hypothesis 6 was therefore rejected.

TABLE XII

ANALYSIS OF COVARIANCE OF LANGUAGE USAGE OF EIGHTH GRADE STUDENTS IN MIDDLE SCHOOL ORGANIZATIONS AND JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	30.1768	1	30.1768	13.8947	.001
Within Groups	2658.3010	1224	2.1718		
Total	2688.4778	1225			

It was predicted that there would be no significant difference between the scores on a measure of Total Language Skills made by eighth grade students after one year in a middle school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 7 was tested by comparing the corrected posttest means on the

Total Language Skills section of the Iowa Tests of Basic Skills through a test of significance using the analysis of covariance. The Total Language Skills means and standard deviations are shown in Table XIII.

TABLE XIII  
TOTAL LANGUAGE SKILLS MEANS AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	6.73	1.60	8.48	1.90	8.04
Middle Schools	846	6.13	1.65	7.66	1.99	7.85

The mean of the pretest for the junior high school group was 6.73, with a standard deviation of 1.60, and the posttest mean was 8.48, with a standard deviation of 1.90. The middle school group had a pretest mean of 6.13, with a standard deviation of 1.65, and a posttest mean of 7.66, with a standard deviation of 1.99. The adjusted mean for the junior high school group was 8.04, and the adjusted mean for the middle school group was 7.85. Comparison of the F ratio in Table XIV with table values for significant levels revealed that 9.5767 with 1 and 1224 degrees of freedom was significant at the .01 level of confidence. Hypothesis 7 was therefore rejected.

TABLE XIV

ANALYSIS OF COVARIANCE OF TOTAL LANGUAGE SKILLS OF EIGHTH  
GRADE STUDENTS IN MIDDLE SCHOOL ORGANIZATIONS AND  
JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	8.9009	1	8.9009	9.5767	.01
Within Groups	1137.6221	1224	.9294		
Total	1146.5229	1225			

It was predicted that there would be no significant difference between the scores on a measure of Map Reading made by eighth grade students after one year in a middle school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 8 was tested by comparing the corrected posttest means on the Map Reading section of the Iowa Tests of Basic Skills through a test of significance using the analysis of covariance. The Map Reading means and standard deviations are shown in Table XV.

The mean of the pretest for the junior high school group was 6.58, with a standard deviation of 1.53, and the posttest mean was 8.29, with a standard deviation of 1.81. The middle school group had a pretest mean of 6.09, with a standard deviation of 1.53, and a posttest mean of 7.93, with

TABLE XV  
MAP READING MEANS AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	6.58	1.53	8.29	1.81	8.02
Middle Schools	846	6.09	1.53	7.93	1.94	8.05

a standard deviation of 1.94. The adjusted mean for the junior high school group was 8.02, and the adjusted mean for the middle school group was 8.05. Comparison of the F ratio in Table XVI with table values for significant levels revealed that .1459 with 1 and 1224 degrees of freedom was not significant. Hypothesis 8 was therefore accepted.

TABLE XVI  
ANALYSIS OF COVARIANCE OF MAP READING OF EIGHTH GRADE STUDENTS IN MIDDLE SCHOOLS AND JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	.3064	1	.3064	.1459	N.S.
Within Groups	2569.7126	1224	2.0994		
Total	2570.0190	1225			

It was predicted that there would be no significant difference between the scores on a measure of Reading Graphs and Tables made by eighth grade students after one year in a middle school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 9 was tested by comparing the corrected posttest means on the Reading Graphs and Tables section of the Iowa Tests of Basic Skills through a test of significance using the analysis of covariance. The Reading Graphs and Tables means and standard deviations are shown in Table XVII.

TABLE XVII  
READING GRAPHS AND TABLES MEANS AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	6.36	1.58	8.03	1.85	7.80
Middle Schools	846	5.87	1.56	7.59	1.91	7.69

The mean of the pretest for the junior high school group was 6.36, with a standard deviation of 1.58, and the posttest mean was 8.03, with a standard deviation of 1.85. The middle school group had a pretest mean of 5.87, with a standard deviation of 1.56, and a posttest mean of 7.59, with a standard deviation of 1.91. The adjusted mean for the junior

high school group was 7.80, and the adjusted mean for the middle school group was 7.69. Comparison of the F ratio in Table XVIII with table values for significant levels revealed that 1.2471 with 1 and 1224 degrees of freedom was not significant. Therefore Hypothesis 9 was accepted.

TABLE XVIII

ANALYSIS OF COVARIANCE OF READING GRAPHS AND TABLES OF EIGHTH GRADE STUDENTS IN MIDDLE SCHOOL ORGANIZATIONS AND JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	2.9949	1	2.9949	1.2471	N.S.
Within Groups	2939.4268	1224	2.4015		
Total	2942.4216	1225			

It was predicted that there would be no significant difference between the scores on a measure of Knowledge and Use of Reference Materials made by eighth grade students after one year in a middle school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 10 was tested by comparing the corrected posttest means on the Knowledge and Use of Reference Materials section of the Iowa Tests of Basic Skills through a test of significance using the analysis of covariance. The Knowledge and Use of Reference Materials means and standard deviations are shown in Table XIX.



TABLE XIX  
 KNOWLEDGE AND USE OF REFERENCE MATERIALS MEANS  
 AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	6.25	1.50	8.37	1.81	8.10
Middle Schools	846	5.81	1.49	7.76	1.88	7.88

The mean of the pretest for the junior high school group was 6.25, with a standard deviation of 1.50, and the posttest mean was 8.37, with a standard deviation of 1.81. The middle school group had a pretest mean of 5.81, with a standard deviation of 1.49, and a posttest mean of 7.76, with a standard deviation of 1.88. The adjusted mean for the junior high school group was 8.10, and the adjusted mean for the middle school group was 7.88. Comparison of the F ratio in Table XX with table values for significant levels revealed that 7.2594 with 1 and 1224 degrees of freedom was significant at the .01 level. Hypothesis 10 was therefore rejected.

It was predicted that there would be no significant difference between the scores on a measure of Total Work-Study Skills made by eighth grade students after one year in a middle school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 11

TABLE XX

ANALYSIS OF COVARIANCE OF KNOWLEDGE AND USE OF REFERENCE  
MATERIALS OF EIGHTH GRADE STUDENTS IN MIDDLE SCHOOL  
ORGANIZATIONS AND JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	11.7463	1	11.7463	7.2594	.01
Within Groups	1980.5430	1224	1.6181		
Total	1992.2893	1225			

was tested by comparing the corrected posttest means on the Total Work-Study Skills section of the  Iowa Tests of Basic Skills  through a test of significance using the analysis of covariance. The Total Work-Study Skills means and standard deviations are shown in Table XXI.

TABLE XXI

TOTAL WORK-STUDY SKILLS MEANS AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	6.39	1.37	8.23	1.58	7.91
Middle Schools	846	5.93	1.34	7.75	1.71	7.90

The mean of the pretest for the junior high school group was 6.39, with a standard deviation of 1.37, and the posttest mean was 8.23, with a standard deviation of 1.58. The middle school group had a pretest mean of 5.93, with a standard deviation of 1.34, and a posttest mean of 7.75, with a standard deviation of 1.71. The adjusted mean for the junior high school group was 7.91, and the adjusted mean for the middle school group was 7.90. Comparison of the F ratio in Table XXII with table values for significant levels revealed that .0758 with 1 and 1224 degrees of freedom was not significant. Hypothesis 11 was therefore accepted.

TABLE XXII

ANALYSIS OF COVARIANCE OF TOTAL WORK-STUDY SKILLS OF EIGHTH GRADE STUDENTS IN MIDDLE SCHOOL ORGANIZATIONS AND JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	.0793	1	.0793	.0758	N.S.
Within Groups	1282.0923	1224	1.0475		
Total	1282.1716	1225			

It was predicted that there would be no significant difference between the scores on a measure of Arithmetic Concepts made by eighth grade students after one year in a

middle school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 12 was tested by comparing the corrected posttest means on the Arithmetic Concepts section of the Iowa Tests of Basic Skills through a test of significance using the analysis of covariance. The Arithmetic Concepts means and standard deviations are shown in Table XXIII.

TABLE XXIII  
ARITHMETIC CONCEPTS MEANS AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	5.89	1.18	8.07	1.72	7.87
Middle Schools	846	5.59	1.18	7.31	1.55	7.40

The mean of the pretest for the junior high school group was 5.89, with a standard deviation of 1.18, and the posttest mean was 8.07, with a standard deviation of 1.72. The middle school group had a pretest mean of 5.59, with a standard deviation of 1.18, and a posttest mean of 7.31, with a standard deviation of 1.55. The adjusted mean for the junior high school group was 7.87, and the adjusted mean for the middle school group was 7.40. Comparison of the F ratio in Table XXIV with table values for significant

levels revealed that 42.3564 with 1 and 1224 degrees of freedom was significant at the .001 level. Hypothesis 12 was therefore rejected.

TABLE XXIV

ANALYSIS OF COVARIANCE OF ARITHMETIC CONCEPTS OF EIGHTH GRADE STUDENTS IN MIDDLE SCHOOL ORGANIZATIONS AND JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	58.1221	1	58.1221	42.3564	.001
Within Groups	1679.5916	1224	1.3722		
Total	1737.7136	1225			

It was predicted that there would be no significant difference between the scores on a measure of Arithmetic Problem Solving made by eighth grade students after one year in a middle school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 13 was tested by comparing the corrected posttest means on the Arithmetic Problem Solving section of the Iowa Tests of Basic Skills through a test of significance using the analysis of covariance. The Arithmetic Problem Solving means and standard deviations are shown in Table XXV.

TABLE XXV  
ARITHMETIC PROBLEM SOLVING MEANS AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	5.65	1.10	7.37	1.52	7.27
Middle Schools	846	5.43	1.15	7.00	1.53	7.04

The mean of the pretest for the junior high school group was 5.65, with a standard deviation of 1.10, and the posttest mean was 7.37, with a standard deviation of 1.52. The middle school group had a pretest mean of 5.43, with a standard deviation of 1.15, and a posttest mean of 7.00, with a standard deviation of 1.53. The adjusted mean for the junior high school group was 7.27, and the adjusted mean for the middle school group was 7.04. Comparison of the  $F$  ratio in Table XXVI with table values for significant levels revealed that 7.5473 with 1 and 1224 degrees of freedom was significant at the .01 level. Hypothesis 13 was therefore rejected. Results of this test are shown in Table XXVI.

It was predicted that there would be no significant difference between the scores on a measure of Total Arithmetic made by eighth grade students after one year in a middle school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 14 was tested by comparing the corrected posttest means on the Total Arithmetic section of the Iowa Tests of Basic Skills through a test of

TABLE XXVI

ANALYSIS OF COVARIANCE OF ARITHMETIC PROBLEM SOLVING OF  
EIGHTH GRADE STUDENTS IN MIDDLE SCHOOL ORGANIZATIONS  
AND JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	13.5510	1	13.5510	7.5473	.01
Within Groups	2197.6606	1224	1.7955		
Total	2211.2117	1225			

significance using the analysis of covariance. The Total Arithmetic means and standard deviations are shown in Table XXVII.

TABLE XXVII

TOTAL ARITHMETIC MEANS AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	5.77	1.01	7.72	1.46	7.55
Middle Schools	846	5.51	1.04	7.15	1.37	7.23

The mean of the pretest for the junior high school group was 5.77, with a standard deviation of 1.01, and the posttest mean was 7.72, with a standard deviation of 1.46.

The middle school group had a prettest mean of 5.51, with a standard deviation of 1.04, and a posttest mean of 7.15, with a standard deviation of 1.37. The adjusted mean for the junior high school group was 7.55, and the adjusted mean for the middle school group was 7.23. Comparison of the F ratio in Table XXVIII with table values for significant levels revealed that 25.8929 with 1 and 1224 degrees of freedom was significant at the .001 level. Therefore Hypothesis 14 was rejected.

TABLE XXVIII

ANALYSIS OF COVARIANCE OF TOTAL ARITHMETIC OF EIGHTH GRADE STUDENTS IN MIDDLE SCHOOL ORGANIZATIONS AND JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	26.0828	1	26.0828	25.8929	.001
Within Groups	1232.9751	1224	1.0073		
Total	1259.0579	1225			

It was predicted that there would be no significant difference between the scores on a measure of Composite Achievement made by eighth grade students after one year in a middle school organization and eighth grade students in a traditionally scheduled junior high school. Hypothesis 15



was tested by comparing the corrected posttest means on the Composite Score of the Iowa Tests of Basic Skills through a test of significance using the analysis of covariance. The Composite Score means and standard deviations are shown in Table XXIX.

TABLE XXIX  
COMPOSITE SCORE MEANS AND STANDARD DEVIATIONS

	Number	Pretest		Posttest		Adjusted Mean
		Mean	S. D.	Mean	S. D.	
Junior Highs	381	6.39	1.21	8.22	1.44	7.79
Middle Schools	846	5.83	1.25	7.53	1.55	7.72

The mean of the pretest for the junior high school group was 6.39, with a standard deviation of 1.21, and the posttest mean was 8.22, with a standard deviation of 1.44. The middle school group had a pretest mean of 5.83, with a standard deviation of 1.25, and a posttest mean of 7.53, with a standard deviation of 1.55. The adjusted mean for the junior high school group was 7.79, and the adjusted mean for the middle school group was 7.72. Comparison of the F ratio in Table XXX with table values for significant levels revealed that 2.6305 with 1 and 1224 degrees of freedom was not significant. Therefore Hypothesis 15 was accepted.

TABLE XXX

ANALYSIS OF COVARIANCE OF COMPOSITE SCORES OF EIGHTH GRADE  
STUDENTS IN MIDDLE SCHOOL ORGANIZATIONS AND  
JUNIOR HIGH SCHOOLS

Source of Variation	Residuals			F	P
	SS	df	MS		
Difference	1.1528	1	1.1528	2.6305	N.S.
Within Groups	536.4177	1224	.4382		
Total	537.5706	1225			

Fifteen academic achievement areas were measured in this portion of the study. The differences in mean gain were not statistically significant in seven of the measures. These areas were: Vocabulary, Reading Comprehension, Spelling, Map Reading, Reading Graphs and Tables, Total Work-Study Skills, and Composite score. There were four areas of academic achievement statistically significant at the  $P = .01$  level in favor of the traditional junior high school. These areas were: Capitalization, Total Language Usage, Knowledge and Use of Reference Materials, and Arithmetic Problem Solving. There were four areas of academic achievement statistically significant at the  $P = .001$  level in favor of the traditional junior high school. These areas were: Punctuation, Language Usage, Arithmetic Concepts, and Total Arithmetic Skills. There were no statistically significant differences in favor of the middle schools.

### Analysis of Personal Adjustment Measures

It was predicted that there would be no significant difference between the scores on a measure of Self-Reliance made by eighth grade students in middle schools and eighth grade students in traditional junior high schools. The results of Fisher's  $t$ -test computed to test Hypothesis 16 are shown in Table XXXI.

TABLE XXXI

SELF-RELIANCE MEANS AND STANDARD DEVIATIONS FOR EIGHTH GRADE STUDENTS IN MIDDLE SCHOOLS AND JUNIOR HIGH SCHOOLS

	Number	Mean	S. D.	$t$	P
Junior Highs	363	9.8375	2.6360	.5108	N.S.
Middle Schools	441	9.7415	2.6631		

The mean for the junior high group was 9.8375, with a standard deviation of 2.6360. The mean for the middle school group was 9.7415, with a standard deviation of 2.6631. The difference between the means was .0960 in favor of the junior high school. The middle school group standard deviation was .0271 higher than the junior high school group. Fisher's  $t$  was found to be .5108. The difference between the means did not prove to be statistically significant. Therefore, the hypothesis was accepted.

It was predicted that there would be no significant difference between the scores on a measure of Sense of Personal Worth made by eighth grade students in middle schools and eighth grade students in traditional junior high schools. The results of Fisher's  $t$ -test computed to test Hypothesis 17 are shown in Table XXXII.

TABLE XXXII

SENSE OF PERSONAL WORTH MEANS AND STANDARD DEVIATIONS  
FOR EIGHTH GRADE STUDENTS IN MIDDLE SCHOOLS  
AND JUNIOR HIGH SCHOOLS

	Number	Mean	S. D.	$t$	P
Junior Highs	363	10.4766	3.0378	.3582	N.S.
Middle Schools	441	10.4014	2.9006		

The mean for the junior high group was 10.4766, with a standard deviation of 3.0378. The mean for the middle school group was 10.4014, with a standard deviation of 2.9006. The difference between the means was .0752 in favor of the junior high school group. The junior high group standard deviation was .1372 higher than the middle school group. Fisher's  $t$  was found to be .3582. The difference between the means did not prove to be statistically significant. Therefore, Hypothesis 17 was accepted.

It was predicted that there would be no significant difference between the scores on a measure of Sense of Personal Freedom made by eighth grade students in middle schools and eighth grade students in traditional junior high schools. The results of Fisher's  $t$ -test computed to test Hypothesis 18 are shown in Table XXXIII.

TABLE XXXIII

SENSE OF PERSONAL FREEDOM MEANS AND STANDARD DEVIATIONS  
FOR EIGHTH GRADE STUDENTS IN MIDDLE SCHOOLS  
AND JUNIOR HIGH SCHOOLS

	Number	Mean	S. D.	$t$	P
Junior Highs	363	10.6529	2.9350	1.0753	N.S.
Middle Schools	441	10.4263	3.0045		

The mean for the junior high group was 10.6529, with a standard deviation of 2.9350. The mean for the middle school group was 10.4263, with a standard deviation of 3.0045. The difference between the means was .2266 in favor of the junior high school group. The middle school group had a slightly greater range of variance of .0695. Fisher's  $t$  was found to be 1.0753. The difference between the means did not prove to be statistically significant. Therefore, Hypothesis 18 was accepted.

It was predicted that there would be no significant difference between the scores on a measure of Feeling of Belonging made by eighth grade students in middle schools and eighth grade students in traditional junior high schools. The results of Fisher's  $t$ -test computed to test Hypothesis 19 are shown in Table XXXIV.

TABLE XXXIV

FEELING OF BELONGING MEANS AND STANDARD DEVIATIONS FOR  
EIGHTH GRADE STUDENTS IN MIDDLE SCHOOLS AND  
JUNIOR HIGH SCHOOLS

	Number	Mean	S. D.	$t$	P
Junior Highs	363	11.7686	2.9209	.3286	N.S.
Middle Schools	441	11.7007	2.9133		

The mean for the junior high group was 11.7686, with a standard deviation of 2.9209. The mean for the middle school group was 11.7007, with a standard deviation of 2.9133. The difference between the means was .0679 in favor of the junior high school group. The junior high group also had a slightly greater range of variance of .0076. Fisher's  $t$  was found to be .3286. The difference between the means did not prove to be statistically significant. Therefore, Hypothesis 19 was accepted.

It was predicted that there would be no significant difference between the scores on a measure of Withdrawing Tendencies made by eighth grade students in middle schools and eighth grade students in traditional junior high schools. The results of Fisher's  $t$ -test computed to test Hypothesis 20 are shown in Table XXXV.

TABLE XXXV

WITHDRAWING TENDENCIES MEANS AND STANDARD DEVIATIONS  
FOR EIGHTH GRADE STUDENTS IN MIDDLE SCHOOLS AND  
JUNIOR HIGH SCHOOLS

	Number	Mean	S. D.	$t$	P
Junior Highs .	363	9.1736	3.3490	- .2457	N.S.
Middle Schools	441	9.2313	3.2879		

The mean for the junior high group was 9.1736, with a standard deviation of 3.3490. The mean for the middle school group was 9.2313, with a standard deviation of 3.2879. The difference between the means was .0577 in favor of the middle school group. The junior high school group had a greater range of variance of .0611. Fisher's  $t$  was found to be - .2457. The difference between the means did not prove to be statistically significant. Therefore, Hypothesis 20 was accepted.

It was predicted that there would be no significant difference between the scores on a measure of Nervous Symptoms made by eighth grade students in middle schools and eighth grade students in traditional junior high schools. The results of Fisher's  $t$ -test computed to test Hypothesis 21 are shown in Table XXXVI.

TABLE XXXVI

NERVOUS SYMPTOMS MEANS AND STANDARD DEVIATIONS FOR  
EIGHTH GRADE STUDENTS IN MIDDLE SCHOOLS AND  
JUNIOR HIGH SCHOOLS

	Number	Mean	S. D.	$t$	P
Junior Highs	363	10.8760	2.9933	- .1260	N.S.
Middle Schools	441	10.9025	2.9391		

The mean for the junior high group was 10.8760, with a standard deviation of 2.9933. The mean for the middle school group was 10.9025 with a standard deviation of 2.9391. The difference between the means was .0265 in favor of the middle school. The junior high school group had a slightly greater range of variance of .0542. Fisher's  $t$  was found to be - .1260. The difference between the means did not prove to be statistically significant. Therefore, Hypothesis 21 was accepted.



It was predicted that there would be no significant difference between the scores on a measure of Total Personal Adjustment made by eighth grade students in middle schools and eighth grade students in traditional junior high schools. The results of Fisher's  $t$ -test computed to test Hypothesis 22 are shown in Table XXXVII.

TABLE XXXVII

TOTAL PERSONAL ADJUSTMENT MEANS AND STANDARD DEVIATIONS  
FOR EIGHTH GRADE STUDENTS IN MIDDLE SCHOOLS AND  
JUNIOR HIGH SCHOOLS

	Number	Mean	S. D.	$t$	P
Junior Highs	363	62.7879	13.7061	.3991	N.S.
Middle Schools	441	62.4036	13.4859		

The mean for the junior high group was 62.7879, with a standard deviation of 13.7061. The mean for the middle school group was 62.4036, with a standard deviation of 13.4859. The difference between the means was .3843 in favor of the junior high school. The junior high school group had a greater range of variance of .2202. Fisher's  $t$  was found to be .3991. The difference between the means did not prove to be statistically significant. Therefore, Hypothesis 22 was accepted.

Of the seven areas of personal adjustment measured none of the mean differences were significantly different from zero. The traditional junior high school group had higher mean scores on Self-Reliance, Sense of Personal Worth, Sense of Personal Freedom, Feeling of Belonging, and Total Personal Adjustment. The middle school group had higher mean scores on Withdrawing Tendencies and Nervous Symptoms.

#### Analysis of Correlation Coefficients

The simple correlation coefficient was computed between the Iowa Tests of Basic Skills, Multi-Level Edition, Form 3 and the California Test of Personality, Intermediate Level, Form AA, Personal Adjustment Section for the eighth grade subjects in the middle schools. Table XXXVIII shows this correlation.

TABLE XXXVIII

COEFFICIENT OF CORRELATION BETWEEN ACADEMIC ACHIEVEMENT  
AND PERSONAL ADJUSTMENT IN MIDDLE SCHOOLS

Academic Achievement	Personal Adjustment	N	r
<u>Iowa Tests of Basic Skills</u> (Composite Score)	<u>California Test of Personality</u> (Total Personal Adjustment)	441	.2596

The Iowa Tests of Basic Skills, Multi-Level Edition, Form 3 measure of academic achievement indicates a low

positive correlation with the Total Personal Adjustment section of the California Test of Personality, Intermediate Level, Form AA. Table XXXVIII shows the  $r$  for academic achievement scores and personal adjustment scores to be .2596. The  $r$  of .2596 for  $df = 369$  was significantly different from zero at the  $p = .001$  level. Therefore, Hypothesis 23 was rejected.

The simple correlation coefficient was computed between the Iowa Tests of Basic Skills, Multi-Level Edition, Form 3 and the California Test of Personality, Intermediate Level, Form AA, Personal Adjustment Section for the eighth grade subjects in the junior high schools. Table XXXIX shows this correlation.

TABLE XXXIX

COEFFICIENT OF CORRELATION BETWEEN ACADEMIC ACHIEVEMENT  
AND PERSONAL ADJUSTMENT IN JUNIOR HIGH SCHOOLS

Academic Achievement	Personal Adjustment	N	$r$
<u>Iowa Tests of Basic Skills</u> (Composite Score)	<u>California Test of Personality</u> (Total Personal Adjustment)	363	.3024

The Iowa Tests of Basic Skills, Multi-Level Edition, Form 3 measure of academic achievement indicates a low positive correlation with the Total Personal Adjustment

section of the California Test of Personality, Intermediate Level, Form AA. Table XXXIX shows the  $r$  for academic achievement scores and personal adjustment scores to be .3024. The  $r$  of .3024 for  $df = 361$  was significantly different from zero at the  $P = .001$  level. Therefore, Hypothesis 24 was rejected.

## CHAPTER V

### SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

#### Summary

There were three basic purposes in this study. They were (1) to determine relationships existing between academic achievement in middle schools and academic achievement in traditional junior high schools, (2) to determine the relationships existing between personal adjustment in middle schools and personal adjustment in traditional junior high schools, and (3) to determine the relationships between academic achievement and personal adjustment in both middle schools and traditional junior high schools.

Because many of the empirical studies that have been done concerning the middle school concept have concentrated upon the sixth grade (3, 4, 7, 8) and because of implications from studies which have indicated a dramatic difference between the eighth grade and the ninth grade (2, 6, 9), this study focused upon the eighth grade students.

The academic achievement portion of the study had 846 experimental subjects from the eighth grade membership of four 6-7-8 middle schools. These schools followed central office instructions to offer flexible modular scheduling, independent study time, team teaching, cooperative planning, and multiple subject exploration. The 381 control subjects

were from two traditional 7-8-9 junior high schools. The time span of the academic achievement portion of the study was one year and three months.

There were fifteen hypotheses formulated concerning the academic achievement portion of the study. For purposes of investigation the hypotheses were stated in the null form. Pretest and posttest data were treated with the analysis of covariance with the significance level for rejection of the null hypotheses set at  $P = .05$ .

The findings were:

1. There was no significant difference between the mean gain of vocabulary of eighth grade students in middle schools and traditional junior high schools.
2. There was no significant difference between reading comprehension of eighth grade students in middle schools and traditional junior high schools.
3. There was no significant difference between the spelling ability of eighth grade students in middle schools and traditional junior high schools.
4. The mean gain of the eighth grade students in the traditional junior high schools on capitalization was significantly greater than the eighth grade students in middle schools. The significance level was  $P = .01$ .
5. The mean gain of the eighth grade students in the traditional junior high schools on punctuation was significantly greater than the eighth grade students in middle schools. The significance level was  $P = .001$ .

6. The mean gain of the eighth grade students in the traditional junior high schools on language usage was significantly greater than the eighth grade students in middle schools. The significance level was  $P = .001$ .

7. The mean gain of the eighth grade students in the traditional junior high schools on total language skills was significantly greater than the eighth grade students in middle schools. The significance level was  $P = .01$ .

8. There was no significant difference between the mean gain of map reading of eighth grade students in middle schools and traditional junior high schools.

9. There was no significant difference between the mean gain of reading graphs and tables of eighth grade students in middle schools and traditional junior high schools.

10. The mean gain of the eighth grade students in the traditional junior high schools on knowledge and use of reference materials was significantly greater than the eighth grade students in middle schools. The significance level was  $P = .01$ .

11. There was no significant difference between the mean gain of total work-study skills of eighth grade students in middle schools and traditional junior high schools.

12. The mean gain of the eighth grade students in the traditional junior high schools on arithmetic concepts was significantly greater than the eighth grade students in middle schools. The significance level was  $P = .001$ .

13. The mean gain of the eighth grade students in the traditional junior high schools on arithmetic problem solving was significantly greater than the eighth grade students in middle schools. The significance level was  $P = .01$ .

14. The mean gain of the eighth grade students in the traditional junior high schools on total arithmetic ability was significantly greater than the eighth grade students in middle schools. The significance level was  $P = .001$ .

15. There was no significant difference between the mean gain of composite academic achievement of eighth grade students in middle schools and traditional junior high schools.

Of the fifteen variables no significant difference was found between junior high schools and middle schools in seven areas of academic achievement. The mean gain of the junior high school group was significantly greater at the  $P = .01$  level in four areas and significantly greater at the  $P = .001$  level in four areas.

The personal adjustment portion of the study had 441 experimental subjects from two 6-7-8 middle schools. The control subjects were 363 students from two 7-8-9 junior high schools. At the time of the personal adjustment measurement of the matched groups, the experimental subjects had been in regular attendance in a school operating under the middle school concept for one year and seven months.

There were seven hypotheses formulated concerning the personal adjustment portion of the study. Fisher's  $t$ -test



of significance was used to treat the data. The significance level of  $P = .05$  was used to test the null hypotheses.

The findings by hypothesis number were:

16. There was significant difference between self-reliance of eighth grade students in middle schools and traditional junior high schools.

17. There was no significant difference between the sense of personal worth of eighth grade students in middle schools and junior high schools.

18. There was no significant difference between the sense of personal freedom of eighth grade students in middle schools and traditional junior high schools.

19. There was no significant difference between the feeling of belonging of eighth grade students in middle schools and traditional junior high schools.

20. There was no significant difference between the withdrawing tendencies of eighth grade students in middle schools and traditional junior high schools.

21. There was no significant difference between the nervous symptoms of eighth grade students in middle schools and traditional junior high schools.

There was no significant difference between the total personal adjustment of eighth grade students in middle schools and traditional junior high schools.

The mean of the junior high school group was higher on self-reliance, sense of personal worth, sense of personal freedom, feeling of belonging, and total personal adjustment. The mean of the middle school group was higher on withdrawing tendencies and nervous symptoms. None of the differences reached significance.

#### Conclusions

The major conclusions that seem to be justified by the findings of the study are:

1. The traditional junior high school programs are superior to the middle school programs operating under forms of the middle school concept in particular areas of academic achievement as measured by instruments in this study.
2. There appears to be no difference in personal adjustment of eighth grade students in association with sixth, seventh, and eighth grade students as opposed to seventh, eighth, and ninth grade students.
3. The middle school concept seems to have little effect upon personal adjustment.
4. There is a significant, low positive correlation between academic achievement and personal adjustment of eighth grade students in both middle schools and junior high schools.

### Implications

The following implications were drawn from the findings and conclusions of the study:

1. The mean gain of eight of the fifteen academic achievement areas favored the junior high school. The mean gain difference on each of the other seven areas was not significant. The four middle schools in the study were the first in the school district to implement the organizational proceedings consistent with the middle school concept. The span of the study included this beginning. Perhaps the findings would have been different in middle schools where procedures had been established for a longer period of time. The findings of Beggs (1) indicated that initial disruptions in flexible scheduling level off after three years. The rapid emergence of new practices could have provided a degree of disruption which could have affected the findings.

2. As mentioned earlier in the study there are many overall school district problems which may be solved by reorganization of grades. Calvin Crieder (5) cited grade organizational patterns throughout history which have indicated that "grouping pupils by grades doesn't make much difference." If further research concerning the middle school movement concludes that there is no significant difference, then the findings of "no significant difference" could stand as

justification in such administrative moves as reorganizing grades in order to save money on staff personnel, to meet the needs of integration, or to conserve facilities. However, if further comprehensive research substantiates the deficiencies of portions of the programs operating under the middle school concept the elected representatives of the people should make the value judgement of choosing between organizational efficiency or the welfare of the transescent.

#### Recommendations

On the basis of the findings of the present study, the following recommendations are made:

1. The present study used the entire membership of one particular grade level. Further research should be undertaken to determine the effects of the middle school concept upon students of particular ability levels.
2. Because of the distinct difference in maturity of boys and girls at this transescent age, it is recommended that a similar study concentrate upon the effects of the middle school concept by sex.
3. Further research should investigate the effects of the middle school concept upon students in other grades contained in the middle school.
4. A longitudinal study should be made to compare students in traditional junior high schools with students

who have spent their entire intermediate school experience in a school operating under the middle school concept.

5. This was a general study done in the early part of the middle school movement. Further research should focus more directly upon particular areas of academic achievement. Perhaps the middle school concept is providing some beneficial effects which are not being measured by current standardized instruments.

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