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AN EXPLORATORY STUDY INTO THE IMPACT OF THE LEVEL OF USE OF COOPERATIVE LEARNING IN FIFTH GRADE AND IN SIXTH GRADE ON STUDENTS' ADJUSTMENT TO AND ACHIEVEMENT IN MIDDLE SCHOOL

By

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ABSTRACT

AN EXPLORATORY STUDY INTO THE IMPACT OF THE LEVEL OF USE OF COOPERATIVE LEARNING IN FIFTH GRADE AND IN SIXTH GRADE ON STUDENTS' ADJUSTMENT TO AND ACHIEVEMENT IN MIDDLE SCHOOL

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In this study, it was theorized that a match between the level of use of cooperative learning in both fifth and sixth grades would positively affect students' adjustment to and achievement in sixth grade. In addition, it was theorized that the higher the level of use of cooperative learning in fifth and/or sixth grade, the better the adjustment and the higher the achievement would be in middle school. A high level of use was defined as proper implementation of the distinguishing characteristics of a selected model of cooperative learning.

No significant interaction effect was found between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' adjustment to and achievement in sixth grade. Students who experienced a low level of use of cooperative learning in sixth grade had significantly higher overall grade point averages (GPAs) than those who experienced moderate to high levels of use of cooperative learning in sixth grade. Students who experienced low to moderate levels of use of cooperative learning in sixth-grade

language arts had significantly higher GPAs than those who experienced a high level of use of cooperative learning in that subject. Students who experienced a moderate level of use of cooperative learning in sixth-grade mathematics had significantly higher GPAs than those who experienced either low or high levels of use of cooperative learning in that subject.

The researcher speculated that factors such as (a) the timing of the study; (b) aspects of Role Strain Theory, such as a student's personality, attitudes or dispositions about coping with change, support from teachers and parents; (c) the sociological conditions of the classroom which may support a more traditional organization of instruction; (d) the appropriateness of the content of cooperative group work; (e) the alignment of the curriculum content, mode of instruction, and assessment/grading practices; and (f) school norms such as clear and focused mission, instructional leadership, policies and procedures, and collegial support to implement new organizations of instruction in the middle school might explain the results.

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CHAPTER I

INTRODUCTION TO THE STUDY

Background and Problem Statement

Writers on teaching and learning in the middle grades (grades six, seven, and eight) have pointed out repeatedly that students at this age have unique developmental characteristics and educational needs (Carnegie Council on Adolescent Development, 1989). Early adolescence, the beginning of the change from childhood to early adulthood, creates a special set of circumstances with which students in the middle grades must deal. Each adolescent child experiences his or her own rate of physical, intellectual, emotional, and social development, and as Ornstein (1992) pointed out, each must deal with new students, dating, sexual awareness, and pressures from parents and/or peers, larger school populations, changing classes, and limited teacher time to explain curriculum or to care about students' problems. All of these factors are stressful to the adolescent. In addition, most middle schools tend to be subject defined and content driven, rather than student oriented (George, Stevenson, Thomason, & Beane, 1992; Muth & Alverman, 1992; Ornstein, 1992).

Researchers have found that when young adolescents make the transition from an elementary school to a middle-grades school, achievement-related attitudes,

values, and performance often deteriorate (Midgley, Feldlaufer, & Eccles, 1989). In addition, researchers have suggested that these students are provided with fewer opportunities for interaction and decision making (Feldlaufer, Midgley, & Eccles, 1988).

For more than 20 years, researchers have studied students' adjustment to middle-level schools (Feldlaufer et al., 1988; Fenzel, 1989a; Mitman, Lash, & Mergendeller, 1985; Mitman & Mergendeller, 1981, 1985; Stefanich, Wills, & Buss, 1991). Role Strain Theory has been used as a framework within which to study the effect that the change from elementary school to middle school has on students' adjustment to middle school (Fenzel, 1989a, 1989b, 1989c, 1989d, 1990a, 1991). In these studies, adjustment was operationalized as positive self-concept, perceived competence, and high achievement as measured by students' grade point averages (GPAs). Role strain occurs if the student's expectations of school and the expectations of others with whom the student interacts are contradictory. When Role Strain Theory is applied to adjustment, the assumption is that the less role strain the student experiences, the better the student's adjustment to and achievement in middle school.

Role strain is reduced by the student's personal coping resources, such as a stable personality, attitudes and dispositions that promote effective adaptation, the student's experiencing an environment that is a developmental match, and social support from significant others. Social support for adolescents comes from peers, teachers, and parents (Fenzel, 1991).

Rounds (1982) recognized that the move to middle school may be a difficult change, but it does not have to be daunting if certain conditions exist:

> If the student role that is learned in elementary school also prevails in middle school the move to the new setting may not be as difficult as one might expect. Students may be able to employ many of the academic and social behaviors, expectations, etc. that worked successfully for them in elementary school in their new setting as well. (p. 2)

A common theme that emerged from the research on adjustment to middle school is that a match between the organization of instruction at both levels of schooling, elementary and middle school, seems to positively influence students' adjustment to and achievement in middle school. Match was defined as consistency of experiences with the organization of instruction at both the elementary school and middle school levels. What was not common in these studies was the way in which organization of instruction was defined. Researchers looked at the consistency of a student's experiences in a number of ways: the amount of homework given to students (Fenzel, 1989b), team teaching or departmentalization (Fenzel, 1989b), the level of use of interdisciplinary teaming (Stefanich, Wills, & Buss, 1991), and the activity structure in the classroom (Rounds, 1982). The idea to study the effect that a match in the organization of instruction in the fifth and sixth grades has on students' transition to middle school came from the above-mentioned body of research on students' transition from elementary school to middle school.

Purpose of the Study

Researchers have found that a match between the organization of instruction in elementary school and middle school positively affects students' adjustment to

and achievement in middle school (Fenzel, 1989a, 1989b). Researchers also have found that the use of cooperative learning has a positive influence on students' achievement, particularly in grades two through nine (Slavin, 1987, 1989/90). Therefore, the researcher's primary purpose in this exploratory study was to determine whether a match in the level of use of cooperative learning as the organization of instruction in fifth and sixth grades positively affects students' adjustment to and achievement in middle school. In addition, the researcher sought to determine (a) whether a match between a high level of use of cooperative learning in fifth grade and in sixth grade has the greatest positive effect on students' adjustment to and achievement in middle school, and (b) whether a high level of use of cooperative learning in fifth and/or sixth grade has a greater effect on students' achievement in sixth grade than do low or moderate levels of use of cooperative learning in fifth and/or sixth grade.

Research Questions

The following questions were posed to address the study purpose and to guide the collection of data for this research.

Student Adjustment

1. Does a match between a high level of use of cooperative learning in the fifth-grade classroom and a high level of use of cooperative learning in the sixth-grade classroom affect students' adjustment to sixth grade?

2. Do students who experience a high level of use of cooperative learning in fifth grade adjust better to sixth grade than students who experience low or moderate levels of use of cooperative learning in fifth grade?

3. Do students who experience a high level of use of cooperative learning in sixth grade adjust better to sixth grade than students who experience low or moderate levels of use of cooperative learning in sixth grade?

Student Achievement

4. Does a match between a high level of use of cooperative learning in the fifth-grade classroom and a high level of use of cooperative learning in the sixth-grade classroom affect students' GPAs in sixth grade?

5. Do students who experienced a high level of use of cooperative learning in fifth grade have higher GPAs in sixth grade than students who experienced low or moderate levels of use of cooperative learning in fifth grade?

6. Do students who experienced a high level of use of cooperative learning in sixth grade have higher GPAs in sixth grade than students who experienced low or moderate levels of use of cooperative learning in sixth grade?

7. Does a match between a high level of use of cooperative learning in fifth-grade language arts and a high level of use of cooperative learning in sixth-grade language arts affect students' GPAs in sixth-grade language arts?

8. Do students who experienced a high level of use of cooperative learning in fifth-grade language arts have higher GPAs in sixth-grade language arts

than students who experienced low or moderate levels of use of cooperative learning in fifth-grade language arts?

9. Do students who experienced a high level of use of cooperative learning in sixth-grade language arts have higher GPAs in sixth- grade language arts than students who experienced low or moderate levels of use of cooperative learning in sixth-grade language arts?

10. Does a match between a high level of use of cooperative learning in fifth-grade mathematics and a high level of use of cooperative learning in sixth-grade mathematics affect students' GPAs in sixth-grade mathematics?

11. Do students who experienced a high level of use of cooperative learning in fifth-grade mathematics have higher GPAs in sixth-grade mathematics than students who experienced low or moderate levels of use of cooperative learning in fifth-grade mathematics?

12. Do students who experienced a high level of use of cooperative learning in sixth-grade mathematics have higher GPAs in sixth- grade mathematics than students who experienced low or moderate levels of use of cooperative learning in sixth-grade mathematics?

13. Does a match between a high level of use of cooperative learning in fifth-grade social studies and a high level of use of cooperative learning in sixth-grade social studies affect students' GPAs in sixth-grade social studies?

14. Do students who experienced a high level of use of cooperative learning in fifth-grade social studies have higher GPAs in sixth-grade social studies

than students who experienced low or moderate levels of use of cooperative learning in fifth-grade social studies?

15. Do students who experienced a high level of use of cooperative learning in sixth-grade social studies have higher GPAs in sixth- grade social studies than students who experienced low or moderate levels of use of cooperative learning in sixth-grade social studies?

16. Does a match between a high level of use of cooperative learning in fifth-grade science and a high level of use of cooperative learning in sixth-grade science affect students' GPAs in sixth-grade science?

17. Do students who experienced a high level of use of cooperative learning in fifth-grade science have higher GPAs in sixth-grade science than students who experienced low or moderate levels of use of cooperative learning in fifth-grade science?

18. Do students who experienced a high level of use of cooperative learning in sixth-grade science have higher GPAs in sixth-grade science than students who experienced low or moderate levels of use of cooperative learning in sixth-grade science?

Rationale

In this research, cooperative learning was selected as the organization of instruction under investigation. A match in the organization of instruction was defined as the student's experience with the same level of use of cooperative

learning in both the fifth- and sixth-grade classrooms. Cooperative learning was selected as the organization of instruction for the following reasons:

1. The recommendations for appropriate practices in middle school encourage the use of cooperative learning as a way to meet the developmental needs of students (Carnegie Council on Adolescent Development, 1989). The use of cooperative learning takes advantage of the middle school student's increased peer orientation, the important role that groups play in students' learning and motivation, and the student's need to be involved in active learning (Mitman & Lambert, 1992; Stevens & Burkin, 1992). Cooperative learning promotes the use of higher-level thinking and decision-making skills (Johnson & Johnson, 1984) and provides adolescents with peers who can serve as appropriate social models (Muth & Alverman, 1992).

2. Social support mediates the potential negative effects of role strain on students' adjustment and achievement (Fenzel, 1989a, 1989c, 1990a, 1991). Role strain is reduced through social support from significant others, and cooperative learning provides the student with social support from his or her peers.

3. A body of research on cooperative learning has substantiated the use of cooperative learning as a means of organizing classrooms to positively influence students' adjustment to and achievement in middle school (Slavin, 1989/90).

In cooperative learning, students have the opportunity to work in small, heterogeneous groups. They must take control of their learning and become decision makers. In cooperative learning, the content of instruction challenges the

students' thinking because they must listen to different ideas, explain their thoughts, and resolve conflicts (Johnson & Johnson, 1984).

In this study, cooperative learning as the organization of instruction comprised the following characteristics:

1. Positive goal interdependence--students perceive that their success in the group depends on the success of other group members.

2. Individual accountability--students maximize their own learning as well as that of the other group members.

3. Students' learning and use of cooperative skills.

4. Students' enhancement of their use of cooperative skills by processing these skills (Johnson & Johnson, 1984).

Johnson and Johnson's model of cooperative learning was selected to represent the organization of instruction in this study for three reasons:

1. This model of cooperative learning is the basis of the staff-development program in the school district involved in this study.

2. Slavin (1989/90) found that positive interdependence and individual accountability are two critical attributes of cooperative learning. Johnson and Johnson's model includes these two characteristics.

3. The Johnson and Johnson model expands Slavin's findings by adding the steps of directly teaching and processing the social skills as distinguishing characteristics of cooperative learning. Musial (1992) pointed out that teaching and processing social skills fit with John Dewey's ideas of developing classrooms that

are cooperative social organizations. Paying attention to the social skills aspect of cooperative learning may reduce the potential negative effects that role strain can have on students' adjustment to and achievement in middle school.

The concept, level of use, defined as the correct implementation of the distinguishing characteristics of an organization for instruction in a classroom, came from the Concerns-Based Adoption Model (Hord, Rutherford, Huling-Austin, & Hall, 1987). This model allows researchers to assess the level at which a teacher is correctly implementing an instructional technique in the classroom. In this case, the level of use of cooperative learning in students' fifth- and sixth-grade classrooms was the organization of instruction under study. A high level of use of cooperative learning means that the distinguishing characteristics of the Johnson and Johnson model are correctly implemented. The level of use of cooperative learning--high, moderate, low, or no use--was measured using a questionnaire completed by each student's fifth- and sixth-grade teachers. The results of this study will help determine whether a match between the level of use of cooperative learning in firth grade and the level of use of cooperative learning in sixth grade positively influences students' adjustment to and achievement in sixth grade.

Significance of the Study

Research on students' adjustment to middle school has indicated that a match between students' experience with the organization of instruction in elementary school and their experience with the organization of instruction in middle school positively influences students' adjustment to and achievement in middle

school. Researchers have found that the use of cooperative learning as an organization of instruction in the classroom was positively related to students' adjustment to and achievement in school (Johnson, Johnson, Holubec, & Roy, 1984; Slavin, 1981, 1988). In this study, the researcher theorized that a match between the level of use of cooperative learning in both the fifth- and sixth-grade classrooms would positively influence students' adjustment to and achievement in sixth grade. In addition, it was theorized that the higher the level of use of cooperative learning in fifth and/or sixth grade, the better the student's adjustment and the higher the student's achievement would be in middle school.

Assumptions

The researcher made the following assumptions in carrying out this study:

1. It was assumed that the level of use of cooperative learning in the individual 1993-94 sixth-grade classrooms was uniform for all students in each classroom. Sixth-grade teachers identified for the study completed the Questionnaire on the Use of Cooperative Groups (Johnson & Johnson, 1986), which indicated their level of use of cooperative learning in the classroom.

2. It was assumed that the level of use of cooperative learning in the individual 1992-93 fifth grade classrooms was uniform for all students in each classroom. Fifth-grade teachers identified for the study also completed the Questionnaire on the Use of Cooperative Groups.

3. It was assumed that there was no systematic bias in GPAs because class assignments in sixth grade are random. In this district, students leaving fifth-

grade classrooms do not necessarily attend the same middle school, nor are they assigned to the same sixth-grade classrooms.

Limitations

1. Specific results of this study may be applicable only to the groups involved. However, the findings from this study may contribute to the research on adjustment to middle school, specifically, examining the effect that a match between high levels of use of cooperative learning in fifth-grade and in sixth-grade classrooms has on students' adjustment to and achievement in middle school.

2. There was no control for initial differences in students' attitudes about their adjustment to middle school.

3. Students' responses on the Student Opinion Survey were based on their perceptions. No attempt was made to determine causes for those perceptions. Students' perceptions can be influenced by a number of factors, some of which are not school related, such as maturation, personal experiences, health problems, personal crises, level of motivation, memory, and/or competence of former teachers.

4. Assessment of students' adjustment and achievement in March 1994 may have been influenced by the effect of history (Campbell & Stanley, 1976). Data for this study were collected in March 1994; assessment of the students' adjustment earlier in the school year might have provided a more accurate picture of students' reactions to sixth grade. The passage of time also might have diminished the researcher's ability to assess the effect that the level of use of cooperative learning in fifth grade had on students' adjustment to and achievement in sixth grade.

5. Relying on teacher reports rather than direct observations of level of use of cooperative learning in each fifth- and sixth-grade classroom might have resulted in some degree of response bias.

6. The fact that one middle school chose not to participate in this study may have resulted in some degree of sampling bias.

Definitions of Terms

The following terms are defined in the context in which they are used in this dissertation.

Adjustment to middle school: A student's perceptions of his or her adjustment to middle school, as measured by his or her responses to the Student Opinion Survey (Mitman, 1981).

Grade point average (GPA): A cumulative average of all of the student's grades, based on a 4.0 scale.

Interaction effect: The effect that a student's experience with the organization of instruction in fifth grade and his or her experience with the organization of instruction in sixth grade has on the student's adjustment to and achievement in middle school.

Level of use of cooperative learning: The correct implementation of the distinguishing characteristics of Johnson and Johnson's model of cooperative learning, as measured by the classroom teachers' responses to the Questionnaire on the Use of Cooperative Groups (Johnson & Johnson, 1986).

Match: The consistency of the experiences a student has with the organization of instruction, in this case the level of use of cooperative learning in the classroom, in both his or her fifth- and sixth-grade classrooms.

Student ability: The student's score on the fifth-grade Cognitive Abilities Test (McGraw-Hill, 1987).

Student achievement: The student's overall GPA, as well as GPAs in language arts, mathematics, social studies, and science.

Organization of the Dissertation

Chapter I included the background of the study and the problem under investigation, the purpose and significance of the study, research questions, rationale, assumptions and limitations, and definitions of key terms. Chapter II contains a review of literature related to the study. Topics include developmental characteristics of middle school students, middle school climate and program components, studies on student adjustment, and cooperative learning. The methodology of the study is described in Chapter III. Results of the data analyses are presented in Chapter IV. Chapter V contains a summary of the study, conclusions drawn from the study findings, recommendations for further research, and the writer's reflections.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

The researcher's primary purpose in this study was to determine whether a match in the level of use of cooperative learning as the organization of instruction in fifth and sixth grades positively affects students' adjustment to and achievement in middle school. In addition, the researcher sought to determine (a) whether a match between a high level of use of cooperative learning in fifth grade and in sixth grade has the greatest positive effect on students' adjustment to and achievement in middle school, and (b) whether a high level of use of cooperative learning in fifth and/or sixth grade has a greater effect on students' achievement in sixth grade than do low or moderate levels of use of cooperative learning in fifth and/or sixth grade.

To provide a background for this study, writings on the developmental characteristics of middle school students, recommendations that experts on middle school education have made regarding the appropriate educational practices for students at this level of schooling, studies on adjustment to middle school, and research on cooperative learning are reviewed in this chapter.

Experts on middle school education agree that it is important to create a school environment that promotes students' achievement and helps students adjust

to the emotional, social, and physical challenges of early adolescence (Carnegie Council on Adolescent Development, 1989). This review of literature on the developmental characteristics of middle school students, middle school climate, and recommended program components is intended to help the reader understand the type of environment that will promote students' adjustment to and achievement in middle school.

Developmental Characteristics of Middle School Students

One of the last opportunities educators have to influence many youngsters' educational and personal direction is in early adolescence. The middle-grades school is one of the key socialization institutions for early adolescents. It represents a critical turning point in the lives of American youths (Jackson & Hornbeck, 1989).

Early adolescence presents unique challenges to students. Romano, Hedberg, and Lulich (1973) described the developmental growth of young adolescents and urged educators to plan activities and programs that address these characteristics. Children grow and mature at different rates, causing some students to make unfavorable comparisons between themselves and other students in terms of their physical development or their ability to perform in class. Emotional and social changes are evidenced by extreme variances in moods and conflicts with parents. Adolescents also are concerned about their relationships with the opposite sex, worry about nonacceptance, are influenced by peer pressure, want fair teachers, and engage in daydreaming. As students mature physically (increase in body size, improved motor skills), they can cope with more complex mental tasks

such as making judgments, thinking reflectively, making generalizations, and engaging in hypothetical reasoning. Also at this stage of development, students' interests in society broaden.

Puberty and the onset of puberty are characterized by height and weight gains, breast development, body and pubic hair growth, penile and testicular development, and menarche (Muth & Alvermann, 1992). A student's physical development affects his or her psychological and social development. Because of the numerous challenges these young adolescents are encountering, middle school programs need to address such issues as general health and diet; cigarette, alcohol, and drug use; sex education; and the students' emotional and social needs.

A wide range of cognitive abilities is evident among middle school students. A student's stage of cognitive development can range from concrete operational (ages 6 to 12), where students tend to learn better visually than verbally, to formal operational thought (ages 11 to adult). To address these differences, teachers of middle-grade students need to use concrete, hands-on experiences and visual aids during instruction. Lessons should be structured so that there are opportunities for peers to interact with each other and the teacher (Muth & Alvermann, 1992). This interaction with peers and the teacher allows students to gain valuable insights into how others think and learn.

Vygotsky's (1978) social perspective of cognitive development suggests that, when young adolescents interact with each other, the social support necessary for learning is present. Students need the opportunity to hear teachers think aloud.

They also need the opportunity to work with peers in small groups to discuss issues, make judgments and decisions, reflect on the ideas of others, and engage in hypothetical reasoning (Bandura, 1986; Romano et al., 1973).

Most students in middle school are concerned with developing their personal identities. A student's self-concept is greatly influenced by experiences with parents, peers, and school. It is important for students to interact with their peers in ways that allow for individual recognition of accomplishments and encouragement of creative, academic, and social growth. Middle school climate and program components are designed to address the developmental needs of early adolescents, thus improving students' attitudes toward school and their academic achievement.

Middle School Climate and Program Components

The overall climate of a middle school--attentiveness to meeting the needs of the early adolescent--is an important part of the literature on middle schools. The Carnegie Council on Adolescent Development (1989) presented the findings of its Task Force on Education of Young Adolescents in a document entitled Turning Points: Preparing American Youth for the 21st Century. In that report, middle schools were urged to enhance success for all learners by eliminating tracking and promoting cooperative learning. Cooperative learning is considered an important way to organize instruction because it helps create a climate that addresses the developmental needs and challenges faced by the middle school child.

Writers on appropriate middle school practices also have taken into account the developmental characteristics of early adolescents. Researchers have

recommended the following program components for effective middle schools: (a) interdisciplinary teams (Cawelti, 1988; George et al., 1992; Lounsbury & Johnston, 1986; Muth & Alvermann, 1992), (b) exploratory courses (Cawelti, 1988; George et al., 1992; Lounsbury et al., 1986; Muth & Alvermann, 1992), (c) long-term student-teacher relationships (Costar, 1985; George et al., 1992; Georgiady & Romano, 1973; Johnston & Markle, 1986; Lounsbury & Johnston, 1988; Muth & Alvermann, 1992), (d) use of a variety of groupings and instructional strategies (George et al., 1992; Lounsbury & Johnston, 1988; Muth & Alvermann, 1992), and (e) parental involvement (Ornstein, 1992). The use of a variety of grouping and instructional strategies, particularly the use of cooperative learning, enhances middle schoolers' academic, social, and emotional development.

Studies on Student Adjustment

Upon leaving elementary school, students face many cognitive, physical, social, and emotional changes. These students must confront a new level of schooling with different expectations, or at least a perceived difference in expectations between the new school and their elementary school. Feldhaufer, Midgley, and Eccles (1988) found that the transition to middle school causes a deterioration in students' achievement-related attitudes, values, and performance. Researchers have studied students' adjustment to the middle grades in order to determine what variables at the elementary level and/or at the middle school level affect students' adjustment.

Any change requires adjustment, and changing from one school level (elementary) to another (middle school) may or may not be traumatic. Researchers have found that positive performance and attitudinal outcome are associated with well-organized, involving, and supportive school environments (Brookover & Erickson, 1975; Felzer, Ginter, & Primavera, 1982; Power & Cotterell, 1981) and high-quality instructional performance of the teachers (Mergendeller & Mitman, 1985).

Eccles and Midgley (1984) argued that the nature of the school environment is crucial to the effect the transition has on early adolescents' development. They suggested that certain characteristics of the school setting, including ability grouping, whole-class instruction, classroom control, higher standards for grading, and lack of emphasis on developmentally appropriate cognitive challenges, have a detrimental influence on students' achievement-related beliefs and motivation. These researchers suggested that a school setting that is developmentally appropriate for early adolescents is one in which there is interdisciplinary team teaching, use of a variety of teaching strategies including cooperative learning, and heterogeneous grouping, thus minimizing negative adjustment effects.

Fenzel (1989a, 1989d) applied the concept of role strain when studying students' adjustment to middle school. He defined a role as "a set of activities and relations expected of a person occupying a particular position in society. Individuals hold . . . specific roles such as student" (p. 3). Middle school students have a particular set of expectations about schools. So do the adults--parents, teachers,

and others--with whom the students interact. Role strain is created when the students' and the adults' expectations are contradictory. When Role Strain Theory is applied to school adjustment, it is assumed that the less role strain that occurs in the transition from elementary to middle school, the better the student's adjustment. Role strain can be minimized when students experience a developmentally appropriate teaching environment, receive social support for learning, and have a set of experiences in one setting (elementary school) that can be transferred to the new setting (middle school).

Following is a summary of Fenzel's findings from a series of studies applying Role Strain Theory to students' adjustment. These studies focused on the organization of instruction in the school setting:

1. Team teaching may contribute to decreased role strain by reducing the size of the early adolescent's reference group and providing more intimate contact with teachers and peers (Fenzel, 1989d).

2. The difference in demands between elementary school and middle school may affect the quality of the transition. Fenzel (1989a) recommended that elementary teachers make demands on students for independent homework that approximate those made by middle school teachers.

3. A middle school environment that includes the use of cooperative learning as an organization of instruction minimizes strain and enhances early adolescents' self-esteem and motivation to learn. Fenzel (1990b) suggested that

such a middle school environment may yield other benefits, such as reducing the dropout rate and promoting lifelong learning.

Fenzel's findings suggest that the developmental appropriateness of the school setting and a match between the elementary school and the middle school organization of instruction allow students to experience a smoother transition to middle school in terms of their academic achievement and social adjustment.

Other researchers have studied the influence that a school's organization of instruction has on students' adjustment. Feldhaufer et al. (1988); Mitman, Lash, and Mergendeller (1989); and Rounds (1981) studied classroom environments across school levels (elementary and middle grades). Their findings suggested that there may be a mismatch between classroom experiences at the two levels of schooling. Rounds concluded that "the success a student's skill in decoding, understanding, and responding to the demands placed on him by different configurations of activity structure elements may be a more important elementary school experience than merely moving from one teacher to another" (p. 8).

Both Fenzel and Rounds recognized that decoding the role of student is important to early adolescents as they move to middle school, and that the strain caused by the change from one level of schooling to another can be minimized if youngsters can transfer what they know about their role as student to the new setting. Providing students with a consistency of experiences in elementary school and middle schools will help bring about a successful adjustment to middle school.

Cooperative Learning

Stevens and Durkin (1992) maintained that students in the middle grades often have low attendance, exhibit poor attitudes toward school, and lack mastery of literacy and numeracy skills. Because cooperative learning has been recommended consistently in the literature on middle schools as an effective way to organize instruction, it is important to understand how it can be used to address the above-mentioned problems.

In his synthesis of research on cooperative learning, Slavin (1989/90) found that there were two areas of agreement among researchers. Cooperative learning, when it is properly implemented, improves the achievement of basic skills among students in grades two through nine, and it has a positive influence on affective outcomes. Slavin defined proper implementation as the existence of two characteristics of cooperative learning groups: positive interdependence and individual accountability. Positive interdependence is the student's perception that his or her success in the group depends on the success of the other group members (Johnson & Johnson, 1984). Individual accountability means that each student is held accountable for his or her contribution to the group; each student's mastery of the material is thereby maximized (Johnson & Johnson, 1984).

Johnson and Johnson (1989/90) and Slavin (1990) believed that students who are allowed to work in groups can experience improved intergroup relationships, enhanced self-esteem, better attitudes toward classmates and school, and improved ability to work collaboratively with others. However, Johnson and Johnson believed

that interpersonal and small-group skills are essential to the success of cooperative learning. They asserted that the vital characteristics of cooperative learning are positive interdependence, individual accountability, face-to-face interaction, direct instruction of cooperative skills, and implementation of the cooperative skills (Johnson & Johnson, 1989/90; Johnson, Johnson, Holubec, & Roy, 1984).

Cooperative learning (a) promotes the use of higher-reasoning strategies and greater critical-thinking competencies; (b) promotes more positive attitudes toward subject areas; (c) helps students master collaborative competencies at a higher level; (d) is positively related to psychological health (emotional maturity, well-adjusted social relations, strong personal identity, and positive attitudes about others); (e) promotes constructive socialization among classmates regardless of differences in ability levels, genders, handicapping conditions, ethnic groups, and socioeconomic statuses; and (f) creates a helping attitude toward classmates. Other outcomes include (a) a perception of peer support and acceptance; (b) greater cognitive and affective perspective taking; (c) enhanced self-esteem; (d) positive attitudes about working with other students in the future; and (e) increased liking of teachers and perception of them as being supportive, both academically and personally (Johnson et al., 1984). The use of cooperative learning takes advantage of middle school students' increased peer orientation, the important role that groups play in students' learning and motivation, and students' need to be involved in active versus passive learning (Mitman & Lambert, 1992; Stevens & Durkin, 1992).

Cooperative learning appears to be an important way to organize instruction that can help educators enhance students' adjustment to middle school. Cooperative learning provides social support for learning and is appropriate for use in both elementary and middle schools (Slavin, 1990). If they apply cooperative learning correctly, middle school teachers will have at least one way to deal with the decline in academic performance that seems to plague students in the middle grades, and they will be better able to address the social and emotional needs of their students.

Summary

Students entering middle school differ greatly--cognitively, physically, socially, and emotionally. Educators' ability to understand this developmental stage, to create an appropriate school climate, and to implement an appropriate organization of instruction is crucial if students are to develop positive attitudes about learning, self, and others. Many believe that middle school is the turning point in a student's education that socializes the student either positively or negatively about school. Experts agree that it is important to create a school environment that promotes student achievement and helps students adjust to the emotional, social, and physical challenges of early adolescence.

Studies on adjustment have indicated that there is a need for a supportive environment in the middle school that meets the cognitive, physical, and psychological needs of early adolescents. Repeatedly, experts on middle schools have recommended the use of cooperative learning as one way to address these

needs. Fenzel (1989c), Feldhaufer et al. (1988), Mitman et al. (1989), and Rounds (1989) suggested that a match between the organization of instruction in elementary school and that in middle school promotes students' success in middle school.

Cooperative learning consistently has been mentioned in the literature on appropriate middle school practices. It has been recommended as an organization of instruction that will improve students' academic achievement and achievement-related attitudes, social skills, and self-esteem. Cooperative learning is a way to address the developmental needs of students by (a) providing social support for learning at a time when peers are important to these students; (b) allowing students to be actively involved in problem solving, perspective taking, and decision making; and (c) allowing all students to receive individual recognition in the psychologically safe environment of the group. Cooperative learning appears to be particularly effective in promoting achievement and improving social and emotional adjustment to school and peers for a wide variety of students.

CHAPTER III

METHODOLOGY

Introduction

The researcher's primary purpose in this study was to determine whether a match in the level of use of cooperative learning as the organization of instruction in fifth and sixth grades positively affects students' adjustment to and achievement in middle school. In addition, the researcher sought to determine (a) whether a match between a high level of use of cooperative learning in fifth grade and in sixth grade has the greatest positive effect on students' adjustment to and achievement in middle school, and (b) whether a high level of use of cooperative learning in fifth and/or sixth grade has a greater effect on students' achievement in sixth grade than do low or moderate levels of use of cooperative learning in fifth and/or sixth grade.

In this chapter, the methodology of the study is explained. First, the study setting and the population are described. Next, the hypotheses are stated. The instruments used to collect the data are discussed, and the data-collection procedures and data-analysis techniques are described.

Hypotheses

The following null hypotheses were formulated to analyze the data collected in this study. The hypotheses are organized into two categories. Hypotheses dealing with students' adjustment to middle school are listed first. The second group of hypotheses deals with students' achievement in middle school, as measured by their GPAs.

Student Adjustment

Null Hypothesis 1: There is no interaction effect between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' adjustment to sixth grade.

Null Hypothesis 2: There is no difference in adjustment to sixth grade between students who experienced a high level of use of cooperative learning in fifth grade and students who experienced either a low or a moderate level of use of cooperative learning in fifth grade.

Null Hypothesis 3: There is no difference in adjustment to sixth grade between students who experienced a high level of use of cooperative learning in sixth grade and students who experienced either a low or a moderate level of use of cooperative learning in sixth grade.

Student Achievement

Overall Grade Point Averages:

Null Hypothesis 4: There is no interaction effect between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth grade.

Null Hypothesis 5: There is no difference in GPAs in sixth grade between students who experienced a high level of use of cooperative learning in fifth grade and students who experienced either a moderate or a low level of use of cooperative learning in fifth grade.

Null Hypothesis 6: There is no difference in GPAs in sixth grade between students who experienced a high level of use of cooperative learning in sixth grade and students who experienced either a moderate or a low level of use of cooperative learning in sixth grade.

Language Arts:

Null Hypothesis 7: There is no interaction effect between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade language arts.

Null Hypothesis 8: There is no difference in GPAs in sixth-grade language arts between students who experienced a high level of use of cooperative learning in fifth-grade language arts and students who experienced either a low or a moderate level of use of cooperative learning in fifth-grade language arts.

Null Hypothesis 9: There is no difference in GPAs in sixth-grade language arts between students who experienced a high level of use of cooperative learning in sixth-grade language arts and students who experienced either a low or a moderate level of use of cooperative learning in sixth-grade language arts.

Mathematics:

Null Hypothesis 10: There is no interaction effect between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade mathematics.

Null Hypothesis 11: There is no difference in GPAs in sixth-grade mathematics between students who experienced a high level of use of cooperative learning in fifth-grade mathematics and students who experienced either a low or a moderate level of use of cooperative learning in fifth-grade mathematics.

Null Hypothesis 12: There is no difference in GPAs in sixth-grade mathematics between students who experienced a high level of use of cooperative learning in sixth-grade mathematics and students who experienced either a low or a moderate level of use of cooperative learning in sixth-grade mathematics.

Social Studies:

Null Hypothesis 13: There is no interaction effect between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade social studies.

Null Hypothesis 14: There is no difference in GPAs in sixth-grade social studies between students who experienced a high level of use of cooperative learning in fifth-grade social studies and students who experienced either a low or a moderate level of use of cooperative learning in fifth-grade social studies.

Null Hypothesis 15: There is no difference in GPAs in sixth-grade social studies between students who experienced a high level of use of cooperative learning in sixth-grade social studies and students who experienced either a low or a moderate level of use of cooperative learning in sixth-grade social studies.

Science:

Null Hypothesis 16: There is no interaction effect between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade science.

Null Hypothesis 17: There is no difference in GPAs in sixth-grade science between students who experienced a high level of use of cooperative learning in fifth-grade science and students who experienced either a low or a moderate level of use of cooperative learning in fifth-grade science.

Null Hypothesis 18: There is no difference in GPAs in sixth-grade science between students who experienced a high level of use of cooperative learning in sixth-grade science and students who experienced a low or a moderate level of use of cooperative learning in sixth-grade science.

Description of the Study Setting and the Population

The suburban school district in which the study was conducted is located in southern Oakland County, Michigan. The district has a population of more than 85,000 people. Approximately 34,000 households provide the district with more than 11,000 students. The district has 3 early childhood centers, 12 elementary schools

(grades K-5), 1 elementary school of choice (grades 1-5), 4 middle schools (grades 6-8), and 3 high schools (grades 9-12). The 12 elementary schools and the elementary school of choice constituted the 13 schools that fed into the middle schools in this study.

The district may be described as a multiethnic community. According to the city's 1990 Census of Population and Housing, of the district's 85,000 residents, approximately 94% are white; 3.5% are Asian or Pacific Islander; 1.8% are black; 1% are Hispanic; .2% are American Indian, Eskimo, or Aleut; and .02% are classified as "other."

The population of students identified for this study comprised all of the sixth graders who had graduated from the school district's fifth-grade classrooms in the 1992-93 school year. This group of students came from the 13 elementary schools that fed into the four middle schools located in that district. All of the sixth-grade students in the population were invited to participate in the study. Characteristics of the study participants are presented in Chapter IV.

Instrumentation

The instruments that were used to collect the data for this study are described in this section.

The Cognitive Abilities Test, Grade 5

The Cognitive Abilities Test (CogAT) (McGraw-Hill, 1987) was used to check for the cognitive equivalence of the study participants. As reported by the publisher,

the reliability scores for the subtests of the CogAT, as determined by Kuder-Richardson Formula 20, were as follows: Verbal Scale = .93, Quantitative Scale = .91, and Nonverbal Scale = .93. To establish criterion-related validity, correlations were made between the CogAT and the Iowa Test of Basic Skills. The criterion-related validity scores for the fifth-grade CogAT were as follows: Verbal Scale = .80, Quantitative Scale = .74, and Nonverbal Scale = .72.

Student Opinion Survey

The Student Opinion Survey (Mitman, 1981) was administered to measure the students' adjustment to sixth grade. Students responded to each of the 36 items on the instrument using a three point scale (3 = positive response/true, 2 = uncertain, 1 = negative response/false). (A copy of the instrument may be found in Appendix A.)

The Student Opinion Survey has an internal reliability of .82 (Cronbach's alpha). Construct validity was established through factor analysis, which yielded eight factors: general dislike of school, confidence about academic performance, friendship, sense of purpose, positive teacher, poor progress with school work, lack of control over work, and positive school. The first factor, general dislike of school, accounted for 59% of the total variance.

Questionnaire on the Use of Cooperative Groups

The Questionnaire on the Use of Cooperative Groups (Johnson & Johnson, 1986) contained 33 items designed to measure the level of use of cooperative

learning in the classroom, as reported by the teacher. (See Appendix B for a copy of the questionnaire). Level of use was defined as the proper implementation of the distinguishing characteristics of cooperative learning: the use of positive interdependence, individual accountability, teaching cooperative skills, and processing cooperative skills. In addition, the following dimensions of cooperative learning are assessed: how students are assigned to groups, the consensus-building strategies of the groups, and strategies for evaluating students' work. Teachers responded to questionnaire items regarding their use of cooperative groups using a four-point scale (C = consistently, U = usually, S = sometimes, R = rarely). The Johnson and Johnson model of cooperative learning is the basis for teacher training in the district under investigation.

The questionnaire was pilot tested in December 1993 to test the reliability of the instrument and to determine whether it could be used to identify distinctly different categories of level of use of cooperative learning. Twenty-three elementary school teachers and 19 middle school teachers participated in the pilot test. Internal consistency reliability (Cronbach's alpha) was .89.

A total score was calculated for each teacher by summing the teacher's responses to Items 7 through 33 on the questionnaire. The distribution of total scores for teachers at the elementary and middle school levels was examined. Assuming a normal distribution, respondents can be divided into three groups (16%, 68%, 16%) in the following manner:

> **High level** of use of cooperative learning: Scores ≥ one standard deviation above the mean.

Moderate level of use of cooperative learning: Scores between + or - one standard deviation from the mean.

Low level of use of cooperative learning: Scores ≤ one standard deviation below the mean.

Teachers who were found to have a high level of use of cooperative learning consistently implemented the distinguishing characteristics of cooperative learning in their classrooms. Conversely, those teachers who exhibited a low level of use of cooperative learning did not properly implement cooperative learning in their classrooms.

Data-Collection Procedures

All of the 1992-93 fifth-grade teachers and all of the 1993-94 sixth-grade teachers in the district were asked to complete the Questionnaire on the Use of Cooperative Groups. The district's Staff Development Department supervised this process. They administered the teacher surveys at the school site, collected the completed surveys, placed the surveys in sealed envelopes, and returned them to the researcher.

The district's representative visited the middle school site and gave the Student Opinion Survey to the sixth-grade teachers, who were then responsible for administering the survey to their sixth-grade students on a selected date. Demographic data were requested on the Student Opinion Survey, in order to be able to describe the study participants. Completed student surveys were sealed in an envelope and returned to the representative of the Staff Development

Department, who then delivered the surveys to the researcher. Each middle school participating in the study provided the researcher with students' GPAs.

The researcher coded the data from the teacher and student surveys and the students' GPAs so that student, teacher, and school identities remained confidential.

Data-Analysis Techniques

Data from the Student Opinion Survey, the Questionnaire on the Use of Cooperative Learning Groups, and students' GPAs were used in testing Hypotheses 1 through 18. Data analysis included descriptive and inferential statistics using the Statistical Package for the Social Sciences (SPSS, 1990) on a MacIntosh desktop computer. Descriptive statistics included mean and standard deviation for all relevant variables. Inferential statistics included an analysis of covariance (ANCOVA) with students' adjustment scores and GPAs covaried with students' scores on the Cognitive Abilities Test for all null hypotheses. Probability of a Type I error for the inferential statistics was $p \leq .05$.

Summary

In this chapter, the hypotheses of the study were stated. The study setting and population, as well as the instruments used to collect the necessary data, were described. Data-collection procedures and data-analysis techniques were reviewed. The results of the data analyses are presented in Chapter IV.

CHAPTER IV

RESULTS

Introduction

The researcher's primary purpose in this exploratory study was to determine whether a match in the level of use of cooperative learning as the organization of instruction in fifth and sixth grades positively affects students' adjustment to and achievement in middle school. In addition, the researcher sought to determine (a) whether a match between a high level of use of cooperative learning in fifth grade and in sixth grade has the greatest positive effect on students' adjustment to and achievement in middle school, and (b) whether a high level of use of cooperative learning in fifth and/or sixth grade has a greater effect on students' achievement in sixth grade than do low or moderate levels of use of cooperative learning in fifth and/or sixth grade.

This chapter is divided into three sections. The first section contains a description of the study participants. Results of the hypothesis testing are presented in the second section. A summary of the results may be found in the third section.

Description of the Study Participants

Ninety-four percent (34) of the school district's 36 1992-93 fifth-grade teachers participated in this study. Two of the 36 teachers were unavailable to participate. The 1993-94 sixth-grade teachers from three of the district's four middle schools agreed to participate in the study (n = 25 out of 34). With the help of these fifth- and sixth-grade teachers, data were collected on 57.4% (n = 496) of the 864 1993-94 sixth-grade students (see Tables 1 and 2). Of the students in the sample, 50% were males and 50% were females (see Table 3). The students ranged in age from 11 years, 1.7 months to 13 years, 7.5 months, with a mean age of 12 years, 1.7 months. The range in ages of students who participated in this study is shown in Table C1, Appendix C.

Table 1: Distribution of sixth-grade students participating in the study by middle school (n = 496).

Site	Frequency	Percent	Cumulative Percent
1	184	37.1	37.1
2	184	37.1	74.2
3	128	25.8	100.0
Total	496	100.0	

Table 2: Number of student participants from each elementary school in the study (n = 496).

Site	Frequency	Percent	Cumulative Percent
1	60	12.1	12.1
2	38	7.7	19.8
3	33	6.7	26.4
4	30	6.0	32.5
5	68	13.7	46.2
6	53	10.7	56.9
7	18	3.6	60.5
8	29	5.8	66.3
9	62	12.5	78.8
10	53	10.7	89.5
11	26	5.2	94.8
12	19	3.8	98.6
13	7	1.4	100.0
Total	496	100.0	

Table 3: Distribution of students participating in the study by gender.

Gender	Frequency	Percent	Cumulative Percent
Male	248	50.0	50.0
Female	248	50.0	100.0
Total	496	100.6	

Note: Population of 1993-94 6th graders = 864; 51.6% (n = 446) of the total population were males; 48.4% of the total population were females.

Other descriptive statistics included information on the students' cognitive abilities as measured by the Cognitive Abilities Test, Grade 5 (McGraw-Hill, 1987). Students' verbal and quantitative scores showed a wide range of cognitive abilities in both areas. The range for verbal scores was 81.0, from the 16th percentile to the 97th percentile. The mean verbal score was 71.7, and the median score was 75.0. The range for quantitative scores was also 81.0, from the 17th percentile to the 98th percentile. The mean quantitative score was 70.7, and the median score was 73.0. Cognitive abilities scores of the study participants are shown in Table C2, Appendix C.

There was also a wide range of GPAs among the study participants. Overall GPA was calculated for each child, as was the child's GPA in each subject area: language arts, mathematics, social studies, and science. The mean GPA in language arts was 8.3, which is slightly better than a B average; the median was 9, which is a B+ average. The mean GPA for mathematics was 7.5, which is slightly better than a B- average; the median was 8, or a B average. The mean and median GPAs for social studies were both 8, which were B averages. The mean GPA for science was 7.7, close to a B average; the median was 9, or a B+ average. The study participants' GPAs may be found in Table C3, Appendix C.

The majority of the students were high achievers, with GPAs in the A and B range. In language arts, 70% of the students had a B average or above. Sixty-nine percent of the students achieved a B- average or above in mathematics. Sixth

percent of them had a B average or above in social studies, and 70% earned a B- average or above in science.

The levels of use of cooperative learning experienced in fifth grade by the students in this study, as reported by the fifth-grade teachers, are shown in Table 4. Fifth-grade teachers reported high, moderate, low, and no levels of use of cooperative learning. In fifth grade, the majority (57%) of the study participants experienced a moderate level of use of cooperative learning across subject areas.

Table 4: Level of use of cooperative learning in fifth grade.

Level of Use	Number of Students	Percent	Cumulative Percent
Low	95	19.2	19.2
Moderate	287	57.9	77.0
High	107	21.6	98.6
No use	7	1.4	100.0
Total	496	100.0	

Table 5 indicates the level of use of cooperative learning the students experienced in sixth grade, as reported by their sixth-grade teachers. A majority of sixth graders experienced a moderate level of use of cooperative learning in the four subject areas: language arts (71%), mathematics (74.6%), social studies (54.6%), and science (72.8%). Sixth-grade teachers reported high, moderate, low, and no levels of use of cooperative learning in language arts, mathematics, and social studies. No sixth-grade students experienced a low level of use of cooperative

learning in science; teachers reported only high, moderate, and no levels of use of cooperative learning in that subject area.

Table 5: Level of use of cooperative learning in sixth-grade language arts, mathematics, social studies, and science classrooms.

Level of Use	Number of Students	Percent	Cumulative Percent
Language Arts			
Low	74	14.9	15.2
Moderate	356	71.8	88.3
High	57	11.5	100.0
No use	9	1.8	
Total	**496**	**100.0**	
Mathematics			
Low	106	21.4	21.4
Moderate	370	74.6	96.2
High	19	3.8	100.0
No use	1	.2	
Total	**496**	**100.0**	
Social Studies			
Low	60	12.1	12.9
Moderate	271	54.6	71.0
High	135	27.2	**100.0**
No use	30	6.0	
Total	**496**	**100.0**	
Science			
Low	0	0	0
Moderate	361	72.8	73.1
High	133	26.8	100.0
No use	2	.4	
Total	**496**	**100.0**	

Four hundred ninety-six 1993-94 sixth-grade students completed the Student Opinion Survey (SOS), which was administered to measure their adjustment to sixth

grade. Only 457 surveys were processed, due to missing data on 39 surveys. Scores ranged from 39 to 93 points out of a possible 108 points. Each student's score was calculated by adding his or her responses to the 36 survey items (3 = positive response/true, 2 = uncertain, 1 = negative response/false). The mean score was 59.6, with a range of 55 points; the standard deviation was 11.8. The distribution of students' adjustment scores is shown in Table C4, Appendix C.

Results of Hypothesis Testing

Analyses of covariance (ANCOVA) were used to test Null Hypotheses 1 through 18. Students' adjustment scores and GPAs were covaried with their scores on the Cognitive Abilities Test. This technique controlled for the potential confounding effect that a student's cognitive ability might have had on his or her adjustment to and achievement in sixth grade. The probability of a Type I error for inferential statistics was $p \leq .05$. In the following pages, each hypothesis is restated, followed by the results for that hypothesis.

Student Adjustment

> Null Hypothesis 1: There is no interaction effect between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' adjustment to sixth grade.

Results. There was no interaction effect ($p = .764$) between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' adjustment to sixth grade. Thus, Null Hypothesis 1 was retained. (See Tables 6 and 7 and Figure 1.)

Table 6: Interaction effect between level of use of cooperative learning in fifth and sixth grades on students' adjustment to sixth grade.

Source of Variation	Sum of Squares	df	Mean Square	Sig. of F
Covariate	4016.638	2	2008.319	.000*
Quantitative	472.242	1	472.242	.062
Verbal	686.114	1	686.114	.025*
Main Effects	77.736	4	19.434	.966
Use in 6th	20.214	2	10.107	.928
Use in 5th	61.508	2	30.754	.796
2-way interaction Use in 5th & 6th	248.961	4	62.240	.764
Explained	4343.335	10	434.334	.001
Residual	60258.256	447	134.806	
Total	64601.592	457	141.360	

*$p \leq .05$.

Table 7: Mean adjustment scores according to the level of use of cooperative learning in fifth and sixth grades.

Use of Cooperative Learning in Sixth Grade	Use of Cooperative Learning in Fifth Grade			
	Low	Moderate	High	Total
Low	59.34 (29)	59.71 (45)	66.00 (5)	59.97 (70)
Moderate	59.50 (56)	60.21 (183)	57.53 (36)	59.71 (275)
High	59.75 (8)	59.83 (77)	57.58 (19)	59.41 (104)
Total	59.47 (93)	60.04 (305)	58.25 (60)	59.68 (458)

Note: The figures in parentheses indicate the number of students.

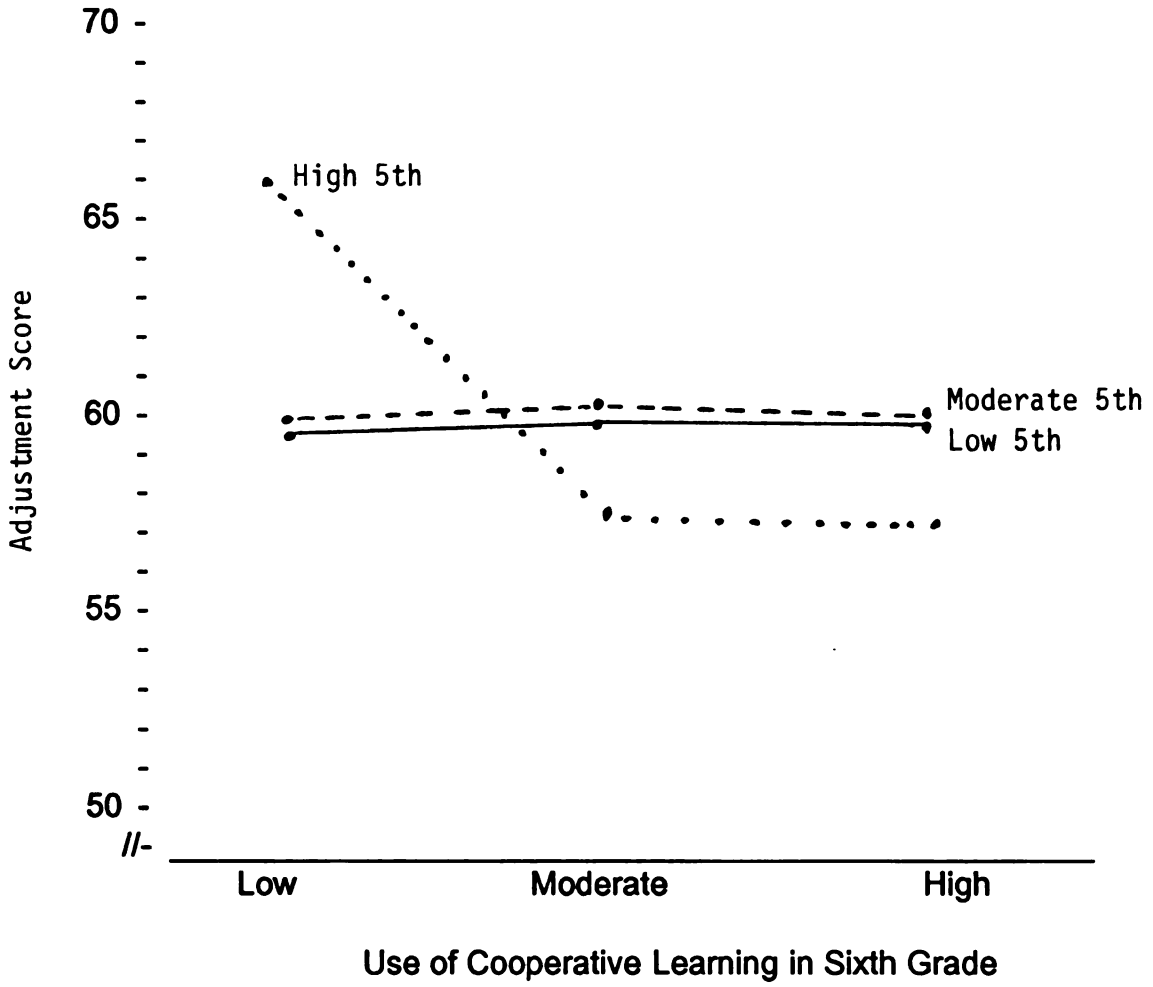


Figure 1: Adjustment scores in sixth grade according to the level of use of cooperative learning in fifth and sixth grades.

Null Hypothesis 2: There is no difference in adjustment to sixth grade between students who experienced a high level of use of cooperative learning in fifth grade and students who experienced either a low or a moderate level of use of cooperative learning in fifth grade.

Results. There was no difference (p = .796) in adjustment to sixth grade between students who experienced a high level of use of cooperative learning in fifth grade and students who experienced either a low or a moderate level of use of cooperative learning in fifth grade. Thus, Null Hypothesis 2 was retained. (See Tables 6 and 7 and Figure 1.)

Null Hypothesis 3: There is no difference in adjustment to sixth grade between students who experienced a high level of use of cooperative learning in sixth grade and students who experienced either a low or a moderate level of use of cooperative learning in sixth grade.

Results. There was no difference (p = .966) in adjustment to sixth grade between students who experienced a high level of use of cooperative learning in sixth grade and students who experienced either a low or a moderate level of use of cooperative learning in sixth grade. Thus, Null Hypothesis 3 was retained. (See Tables 6 and 7 and Figure 1.)

Student Achievement

Grades in language arts, mathematics, social studies, and science were examined for 496 sixth-grade students. If any student was missing a grade in any of the four subject areas, the computer did not calculate that student's GPA. Therefore, only 463 students were accounted for in testing Hypotheses 4 through 6, which concerned overall GPAs. Students with missing data tended to be those who received support services such as bilingual services, remedial reading, or special

education. These students were pulled out of core subjects, usually language arts or social studies, to receive support services.

Overall Grade Point Averages:

Null Hypothesis 4: There is no interaction effect between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth grade.

Results. There was no interaction effect ($p = .659$) between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth grade. Thus, Hypothesis 4 was retained. (See Tables 8 and 9 and Figure 2.)

Null Hypothesis 5: There is no difference in GPAs in sixth grade between students who experienced a high level of use of cooperative learning in fifth grade and students who experienced either a moderate or a low level of use of cooperative learning in fifth grade.

Results: There was no difference ($p = .937$) in GPAs in sixth grade between students who experienced a high level of use of cooperative learning in fifth grade and students who experienced either a low or a moderate level of use of cooperative learning in fifth grade. Thus, Null Hypothesis 5 was retained. (See Tables 8 and 9 and Figure 2.)

Null Hypothesis 6: There is no difference in GPAs in sixth grade between students who experienced a high level of use of cooperative learning in sixth grade and students who experienced either a moderate or a low level of use of cooperative learning in sixth grade.

Results: There was a difference ($p = .000$) in GPAs in sixth grade between students who experienced a low level of use of cooperative learning in sixth grade and students who experienced moderate or high levels of use of cooperative

Table 8: Interaction effect between level of use of cooperative learning in fifth and sixth grades on students' overall GPAs in sixth grade.

Source of Variation	Sum of Squares	df	Mean Square	Sig. of F
Covariate	852.940	2	425.470	.000*
Quantitative	92.621	1	92.621	.000*
Verbal	152.200	1	152.200	.000*
Main Effects	109.089	4	27.272	.000*
Use in 6th	105.469	2	52.735	.000*
Use in 5th	.552	2	.276	.937
2-way interaction Use in 5th & 6th	10.260	4	2.565	.659
Explained	972.290	10	97.229	.000*
Residual	1919.176	453	4.237	
Total	2891.466	463	6.245	

*$p \leq .05$.

Table 9: Overall GPAs according to the level of use of cooperative learning in fifth and sixth grades.

Use of Cooperative Learning in Sixth Grade	Use of Cooperative Learning in Fifth Grade			
	Low	Moderate	High	Total
Low	8.51 (29)	8.45 (46)	8.75 (5)	8.49 (80)
Moderate	7.82 (58)	7.94 (188)	8.24 (37)	7.95 (283)
High	6.81 (9)	7.05 (74)	7.53 (19)	7.12 (102)
Total	7.93 (96)	7.80 (308)	8.06 (61)	7.86 (465)

Note: The figures in parentheses indicate the number of students.

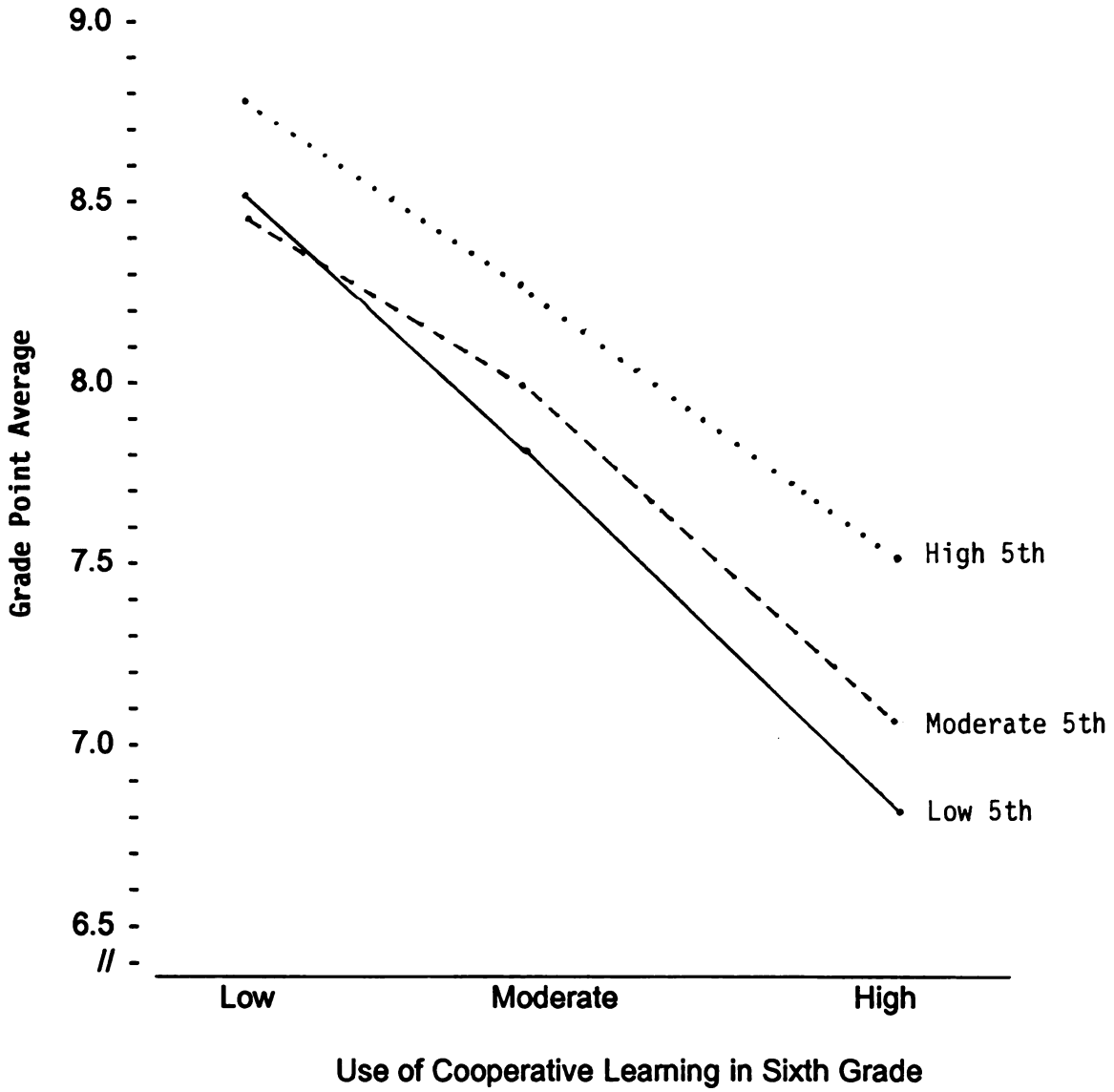


Figure 2: GPAs in sixth grade according to the level of use of cooperative learning in fifth and sixth grades.

learning in sixth grade. Thus, Null Hypothesis 6 was rejected. Follow-up tests indicated that students who experienced a low level of use of cooperative learning in sixth grade had higher GPAs than those who experienced either a moderate or a high level of use of cooperative learning in sixth grade. (See Tables 8 and 9 and Figure 2.)

Language Arts:

Null Hypothesis 7: There is no interaction effect between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade language arts.

Results: There was no interaction effect (p = .319) between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade language arts. Thus, Null Hypothesis 7 was retained. (See Tables 10 and 11 and Figure 3.)

Null Hypothesis 8: There is no difference in GPAs in sixth-grade language arts between students who experienced a high level of use of cooperative learning in fifth-grade language arts and students who experienced either a low or a moderate level of use of cooperative learning in fifth-grade language arts.

Results: There was no difference (p = .223) in GPAs in sixth-grade language arts between students who experienced a high level of use of cooperative learning in fifth-grade language arts and students who experienced either a low or a moderate level of use of cooperative learning in fifth-grade language arts. Thus, Null Hypothesis 8 was retained. (See Tables 10 and 11 and Figure 3.)

Table 10: Interaction effect between level of use of cooperative learning in fifth- and sixth-grade language arts on students' GPAs in sixth-grade language arts.

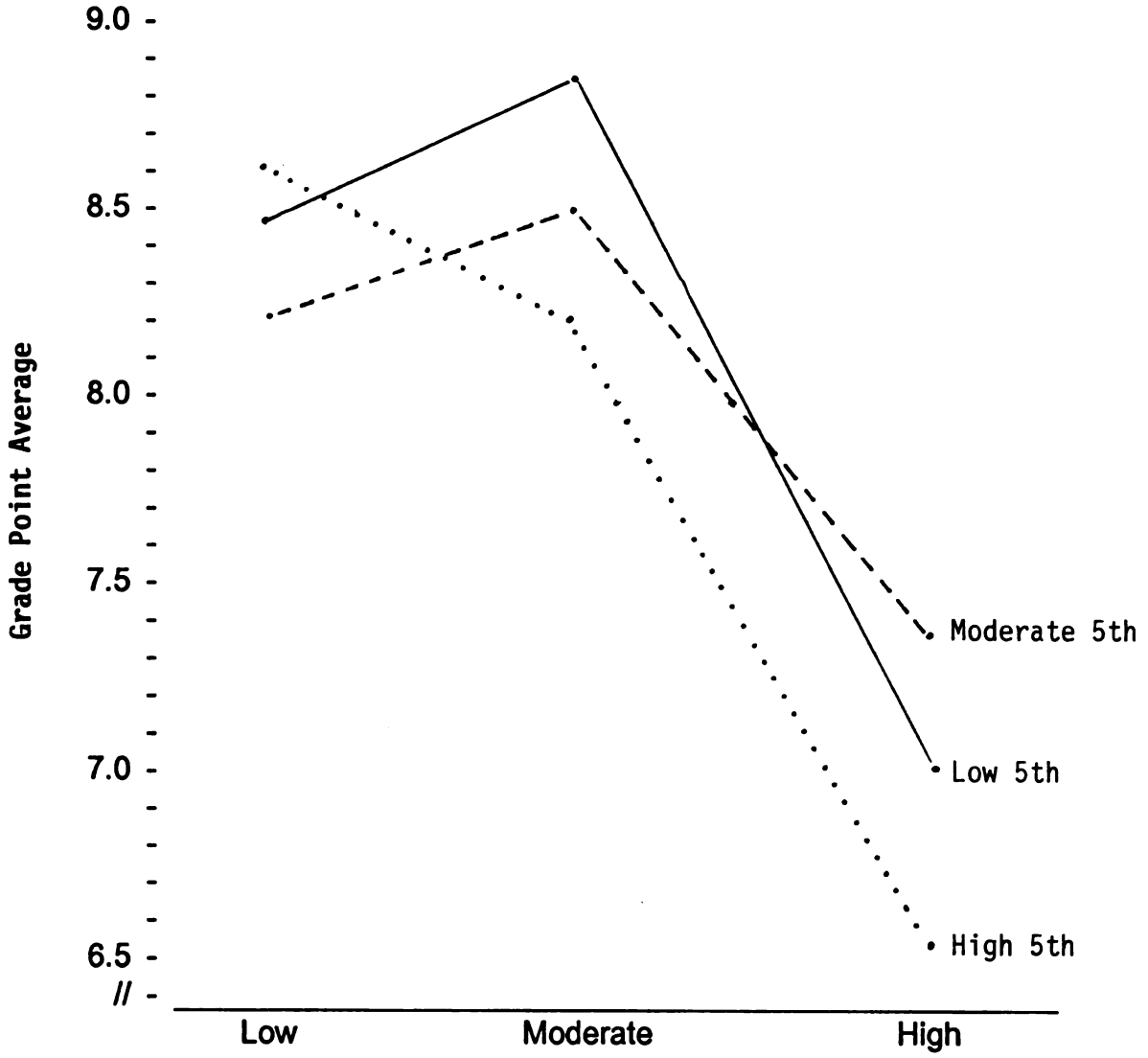
Source of Variation	Sum of Squares	df	Mean Square	Sig. of F
Covariate Cognitive/Verbal	507.807	1	507.807	.000*
Main Effects Use in 6th Use in 5th	94.982 84.159 15.895	4 2 2	23.746 42.079 7.947	.001* .000* .223
2-way interaction Use in 5th & 6th	24.911	4	1.179	.319
Explained	627.699	9	69.744	.000*
Residual	2424.851	459	5.283	
Total	3052.550	468	6.523	

*$p \leq .05$.

Table 11: Mean GPAs in sixth-grade language arts according to the level of use of cooperative learning in fifth- and sixth-grade language arts.

Use of Cooperative Learning in Sixth Grade	Use of Cooperative Learning in Fifth Grade			
	Low	Moderate	High	Total
Low	8.47 (19)	8.21 (38)	8.60 (15)	8.37 (72)
Moderate	8.87 (53)	8.51 (210)	8.21 (78)	8.50 (341)
High	7.00 (18)	7.41 (27)	6.55 (11)	7.11 (56)
Total	8.41 (90)	8.36 (275)	8.10 (104)	8.31 (469)

Note: The figures in parentheses indicate the number of students.



Key:
Low use of cooperative learning in 5th grade
Moderate use of cooperative learning in 5th grade
High use of cooperative learning in 5th grade

Figure 3: GPAs in sixth-grade language arts according to the level of use of cooperative learning in fifth- and sixth-grade language arts.

Null Hypothesis 9: There is no difference in GPAs in sixth-grade language arts between students who experienced a high level of use of cooperative learning in sixth-grade language arts and students who experienced either a low or a moderate level of use of cooperative learning in sixth-grade language arts.

Results: There was a difference (p = .000) in GPAs in sixth-grade language arts between students who experienced a high level of use of cooperative learning in sixth-grade language arts and students who experienced either a low or a moderate level of use of cooperative learning in sixth-grade language arts. Thus, Null Hypothesis 9 was rejected. Follow-up tests indicated that low and moderate levels of use of cooperative learning in sixth-grade language arts resulted in higher GPAs in language arts than did a high level of use of cooperative learning. (See Tables 10 and 11 and Figure 3.)

Mathematics:

Null Hypothesis 10: There is no interaction effect between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade mathematics.

Results: There was no interaction effect (p = .190) between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade mathematics. Thus, Null Hypothesis 10 was retained. (See Tables 12 and 13 and Figure 4.)

Null Hypothesis 11: There is no difference in GPAs in sixth-grade mathematics between students who experienced a high level of use of cooperative learning in fifth-grade mathematics and students who experienced either a low or a moderate level of use of cooperative learning in fifth-grade mathematics.

Results: There was no difference (p = .450) in GPAs in sixth-grade mathematics between students who experienced a high level of use of cooperative

Table 12: Interaction effect between level of use of cooperative learning in fifth- and sixth-grade mathematics on students' GPAs in sixth-grade mathematics.

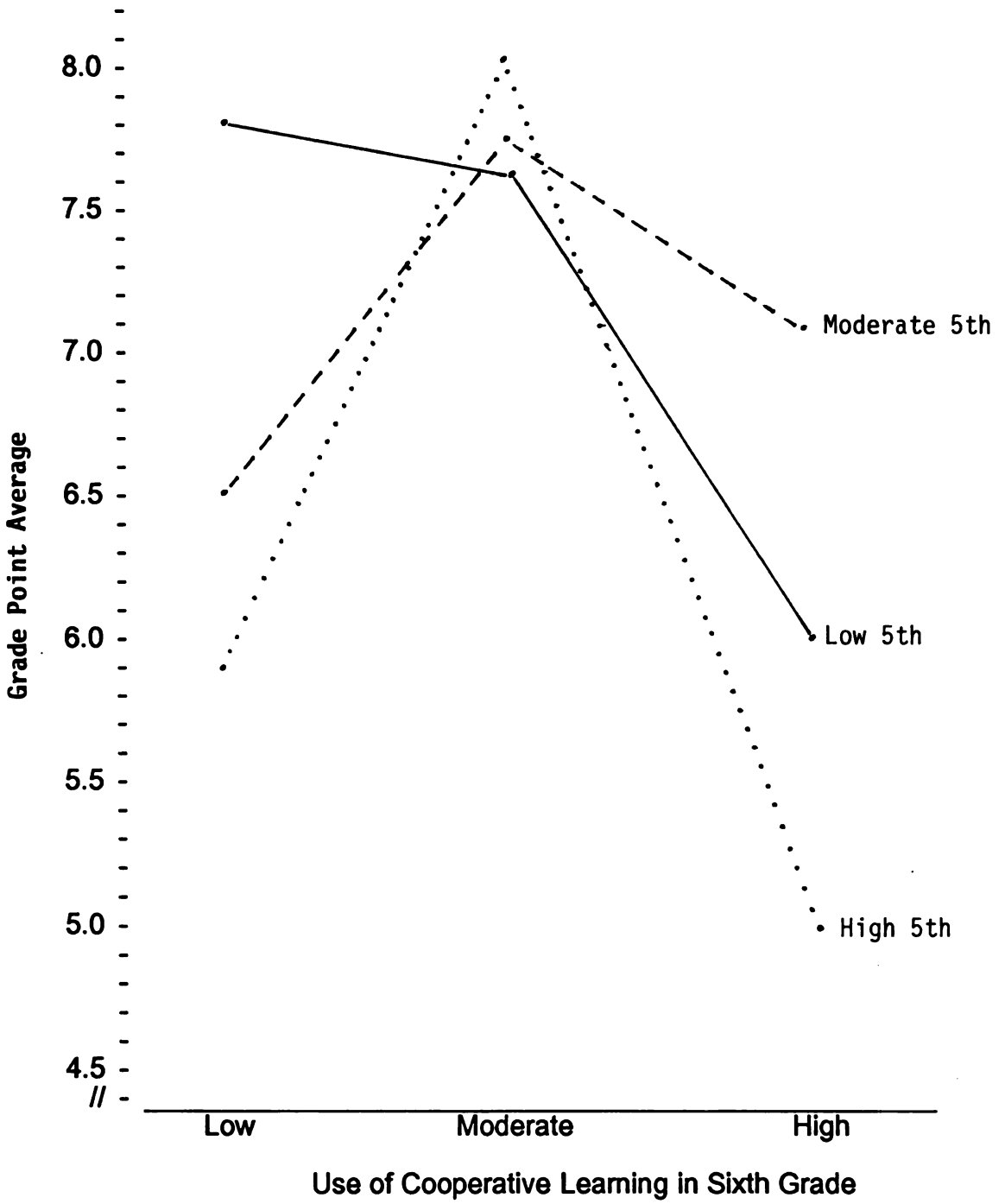
Source of Variation	Sum of Squares	df	Mean Square	Sig. of F
Covariate Cognitive/Quantitative	825.641	1	825.641	.000*
Main Effects Use in 6th Use in 5th	203.192 193.755 9.806	4 2 2	50.798 96.877 4.903	.000* .000* .450
2-way interaction Use in 5th & 6th	37.714	4	9.429	.190
Explained	1066.547	9	118.505	.000*
Residual	2933.052	478	6.136	
Total	3999.598	487	8.213	

*$p \leq .05$.

Table 13: Mean GPAs in sixth-grade mathematics according to the level of use of cooperative learning in fifth- and sixth-grade mathematics.

Use of Cooperative Learning in Sixth Grade	Use of Cooperative Learning in Fifth Grade			
	Low	Moderate	High	Total
Low	7.81 (21)	6.49 (65)	5.90 (20)	6.64 (106)
Moderate	7.63 (71)	7.74 (213)	8.06 (79)	7.79 (363)
High	6.00 (3)	7.12 (8)	5.00 (8)	6.05 (19)
Total	7.69 (95)	7.44 (286)	7.43 (107)	7.49 (488)

Note: The figures in parentheses indicate the number of students.



Key: _____ Low use of cooperative learning in 5th grade
– – – – – Moderate use of cooperative learning in 5th grade
..... High use of cooperative learning in 5th grade

Figure 4: GPAs in sixth-grade mathematics according to the level of use of cooperative learning in fifth- and sixth-grade mathematics.

learning in fifth-grade mathematics and students who experienced either a low or a moderate level of use of cooperative learning in fifth-grade mathematics. Thus, Null Hypothesis 11 was retained. (See Tables 12 and 13 and Figure 4.)

> Null Hypothesis 12: There is no difference in GPAs in sixth-grade mathematics between students who experienced a high level of use of cooperative learning in sixth-grade mathematics and students who experienced either a low or a moderate level of use of cooperative learning in sixth-grade mathematics.

Results: There was a difference (p = .000) in GPAs in sixth-grade mathematics between students who experienced a high level of use of cooperative learning in sixth-grade mathematics and students who experienced either a low or a moderate level of use of cooperative learning in sixth-grade mathematics. Thus, Null Hypothesis 12 was rejected. (See Tables 12 and 13 and Figure 4.) Follow-up tests indicated that a moderate level of use of cooperative learning in sixth-grade mathematics positively affected students' GPAs in sixth-grade mathematics.

Social Studies:

> Null Hypothesis 13: There is no interaction effect between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade social studies.

Results: There was no interaction effect (p = .683) between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade social studies. Thus, Null Hypothesis 13 was retained. (See Tables 14 and 15 and Figure 5.)

Table 14: Interaction effect between level of use of cooperative learning in fifth- and sixth-grade social studies on students' GPAs in sixth-grade social studies.

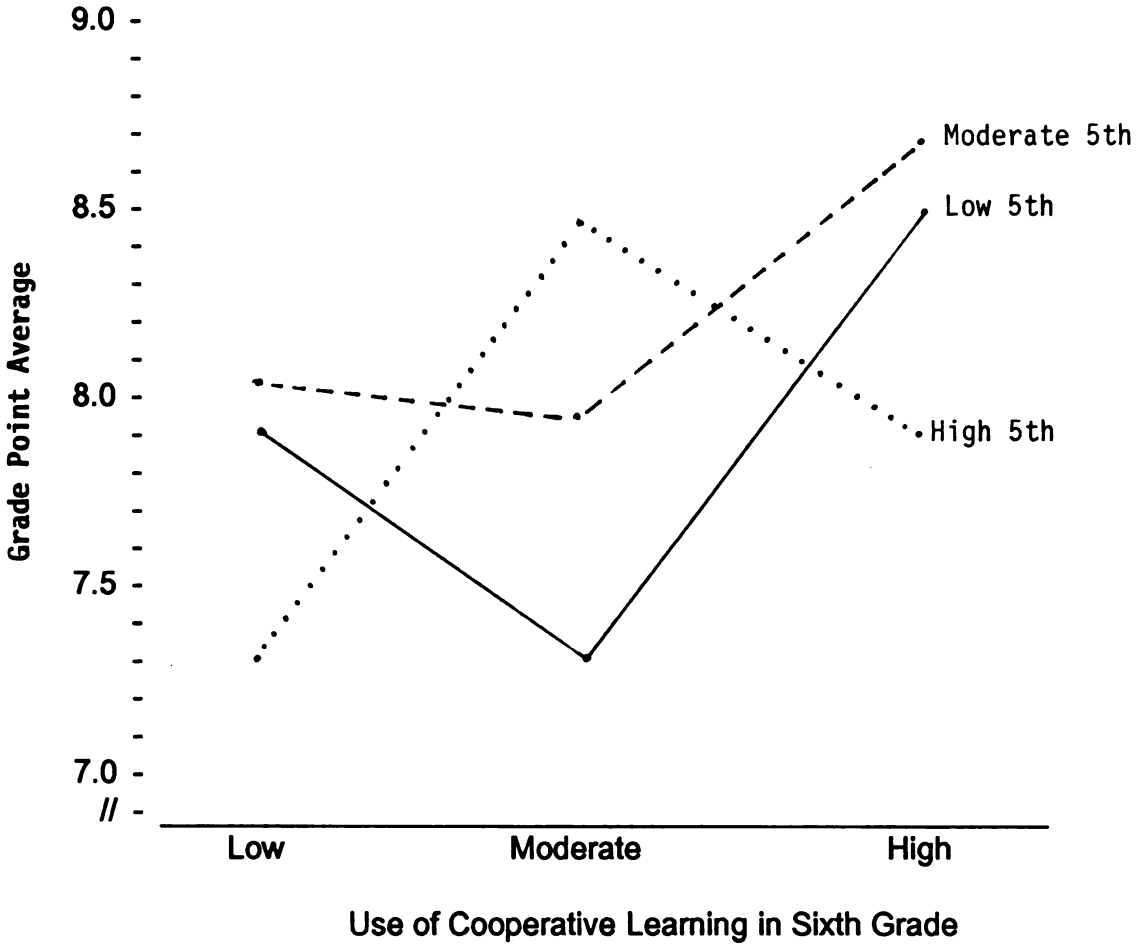
Source of Variation	Sum of Squares	df	Mean Square	Sig. of F
Covariate Cognitive/Verbal	758.011	1	758.011	.000*
Main Effects Use in 6th Use in 5th	20.047 18.275 5.157	4 2 2	5.012 9.138 2.579	.523 .232 .661
2-way interaction Use in 5th & 6th	14.271	4	3.568	.683
Explained	792.329	9	88.037	.000*
Residual	2735.666	439	6.232	
Total	3527.996	448	7.875	

*$p \leq .05$.

Table 15: Mean GPAs in sixth-grade social studies according to the level of use of cooperative learning in fifth- and sixth-grade social studies.

Use of Cooperative Learning in Sixth Grade	Use of Cooperative Learning in Fifth Grade			
	Low	Moderate	High	Total
Low	7.91 (22)	8.04 (26)	7.30 (10)	7.86 (58)
Moderate	7.29 (31)	7.91 (178)	8.46 (48)	7.94 (257)
High	8.48 (33)	8.69 (61)	7.90 (40)	8.40 (134)
Total	7.91 (86)	8.10 (265)	8.11 (98)	8.07 (449)

Note: The figures in parentheses indicate the number of students.



Key:
_____ Low use of cooperative learning in 5th grade
– – – – – Moderate use of cooperative learning in 5th grade
..... High use of cooperative learning in 5th grade

Figure 5: GPAs in sixth-grade social studies according to the level of use of cooperative learning in fifth- and sixth-grade social studies.

Null Hypothesis 14: There is no difference in GPAs in sixth-grade social studies between students who experienced a high level of use of cooperative learning in fifth-grade social studies and students who experienced either a low or a moderate level of use of cooperative learning in fifth-grade social studies.

Results: There was no difference (p = .661) in GPAs in sixth-grade social studies between students who experienced a high level of use of cooperative learning in fifth-grade social studies and students who experienced either a low or a moderate level of use of cooperative learning in fifth-grade social studies. Thus, Null Hypothesis 14 was retained. (See Tables 14 and 15 and Figure 5.)

Null Hypothesis 15: There is no difference in GPAs in sixth-grade social studies between students who experienced a high level of use of cooperative learning in sixth-grade social studies and students who experienced either a low or a moderate level of use of cooperative learning in sixth-grade social studies.

Results: There was no difference (p = .232) in GPAs in sixth-grade social studies between students who experienced a high level of use of cooperative learning in sixth-grade social studies and students who experienced either a low or a moderate level of use of cooperative learning in sixth-grade social studies. Thus, Null Hypothesis 15 was retained. (See Tables 14 and 15 and Figure 5.)

Science:

Null Hypothesis 16: There is no interaction effect between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade science.

Results: There was no interaction effect (p = .805) between the level of use of cooperative learning in fifth grade and the level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade science. Thus, Null Hypothesis 16 was retained. (See Tables 16 and 17 and Figure 6.)

Table 16: Interaction effect between level of use of cooperative learning in fifth- and sixth-grade science on students' GPAs in sixth-grade science.

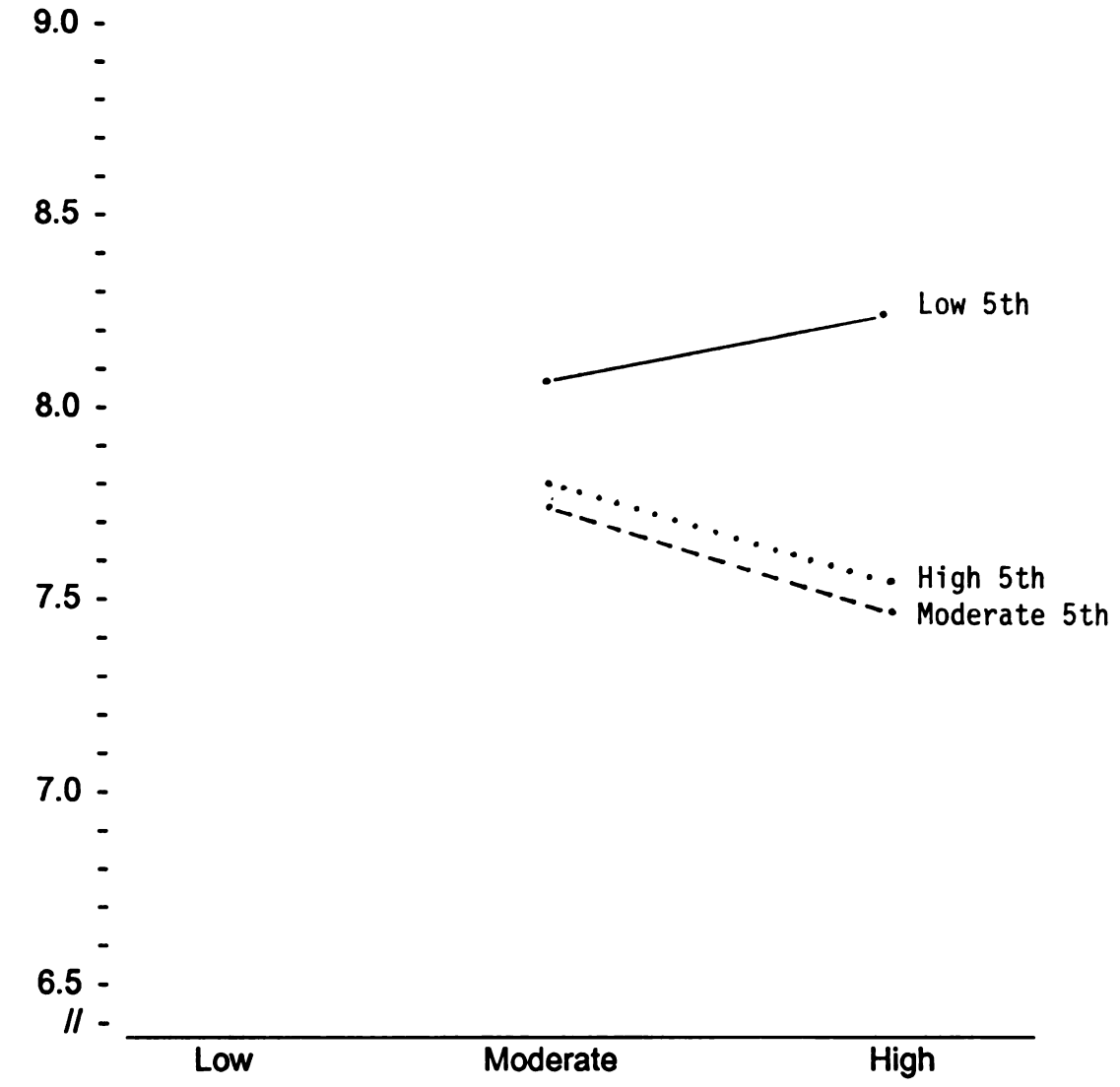
Source of Variation	Sum of Squares	df	Mean Square	Sig. of F
Covariate	1111.732	2	555.866	.000*
Cognitive/Quantitative	74.223	1	74.223	.003*
Cognitive/Verbal	281.690	1	281.690	.000*
Main Effects	30.232	3	10.077	.298
Use in 6th	5.076	1	5.076	.432
Use in 5th	26.800	2	13.400	.196
2-way interaction Use in 5th & 6th	3.566	2	1.783	.805
Explained	1145.530	7	19.967	.000*
Residual	3802.835	464	8.196	
Total	4948.364	471	10.506	

*$p \leq .05$.

Table 17: Mean GPAs in sixth-grade science according to the level of use of cooperative learning in fifth- and sixth-grade science.

Use of Cooperative Learning in Sixth Grade	Use of Cooperative Learning in Fifth Grade			
	Low	Moderate	High	Total
Low	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
Moderate	8.08 (59)	7.73 (203)	7.81 (78)	7.81 (340)
High	8.22 (32)	7.44 (72)	7.57 (28)	7.66 (132)
Total	8.13 (91)	7.65 (275)	7.75 (106)	7.77 (472)

Note: The figures in parentheses indicate the number of students.



Key:
_____ Low use of cooperative learning in 5th grade
– – – – – Moderate use of cooperative learning in 5th grade
..... High use of cooperative learning in 5th grade

Figure 6: GPAs in sixth-grade science according to the level of use of cooperative learning in fifth- and sixth-grade science.

Null Hypothesis 17: There is no difference in GPAs in sixth-grade science between students who experienced a high level of use of cooperative learning in fifth-grade science and students who experienced either a low or a moderate level of use of cooperative learning in fifth-grade science.

Results: There was no difference (p = .196) in GPAs in sixth-grade science between students who experienced a high level of use of cooperative learning in fifth-grade science and students who experienced either a low or a moderate level of use of cooperative learning in fifth-grade science. Thus, Null Hypothesis 17 was retained. (See Tables 16 and 17 and Figure 6.)

Null Hypothesis 18: There is no difference in GPAs in sixth-grade science between students who experienced a high level of use of cooperative learning in sixth-grade science and students who experienced a low or a moderate level of use of cooperative learning in sixth-grade science.

Results There was no difference (p = .432) in GPAs in sixth-grade science between students who experienced a high level of use of cooperative learning in sixth-grade science and students who experienced either a low or a moderate level of use of cooperative learning in sixth-grade science. Thus, Null Hypothesis 18 was retained. (See Tables 16 and 17 and Figure 6.)

Summary of Results

A summary and interpretation of the results of hypothesis testing is presented in Tables 18 through 23. Chapter V contains a summary of the study. Conclusions are drawn from the study findings, and recommendations are made for further research.

Table 18: Adjustment to sixth grade.

Null Hypotheses/Results	Interpretation
Ho 1: No interaction effect between level of use of cooperative learning in fifth and sixth grades on students' adjustment to sixth grade: **Retained**	The relationship between the level of use of cooperative learning in fifth and sixth grades had no effect on students' adjustment to sixth grade.
Ho 2: No effect of level of use of cooperative learning in fifth grade on students' adjustment to sixth grade: **Retained**	The level of use of cooperative learning experienced by students in fifth grade did not affect the students' adjustment to sixth grade.
Ho 3: No effect of level of use of cooperative learning in sixth grade on students' adjustment to sixth grade: **Retained**	The level of use of cooperative learning experienced by students in sixth grade did not affect the students' adjustment to sixth grade.

Table 19: Overall GPAs in sixth grade.

Null Hypotheses/Results	Interpretation
Ho 4: No interaction effect between level of use of cooperative learning in fifth and sixth grades on students' achievement in sixth grade: **Retained**	The relationship between the level of use of cooperative learning in fifth and sixth grades had no effect on the students' achievement in sixth grade.
Ho 5: No effect of level of use of cooperative learning in fifth grade on students' achievement in sixth grade: **Retained**	The level of cooperative learning experienced by students in fifth grade did not affect the students' achievement in sixth grade.
Ho 6: No effect of level of use of cooperative learning in sixth grade on students' achievement in sixth grade: **Rejected***	A low level of use of cooperative learning in sixth grade led to higher GPAs in sixth grade than did a moderate or high level of use.

*$p \leq .05$.

Table 20: Sixth-grade language arts.

Null Hypotheses/Results	Interpretation
Ho 7: No interaction effect between level of use of cooperative learning in fifth and sixth grades on students' GPAs in sixth-grade language arts: **Retained**	The relationship between the level of use of cooperative learning in fifth and sixth grades had no effect on students' GPAs in sixth-grade language arts.
Ho 8: No effect of level of use of cooperative learning in fifth grade on students' GPAs in sixth-grade language arts: **Retained**	The level of use of cooperative learning experienced by students in fifth grade did not affect the students' GPAs in sixth-grade language arts.
Ho 9: No effect of level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade language arts: **Rejected***	A low or a moderate level of use of cooperative learning experienced by students in sixth grade led to higher GPAs in sixth-grade language arts than did a high level of use.

*$p \leq .05$.

Table 21: Sixth-grade mathematics.

Null Hypotheses/Results	Interpretation
Ho 10: No interaction effect between level of use of cooperative learning in fifth and sixth grades on students' GPAs in sixth-grade mathematics: **Retained**	The relationship between level of use of cooperative learning in fifth and sixth grades had no effect on students' GPAs in sixth-grade mathematics.
Ho 11: No effect of level of use of cooperative learning in fifth grade on students' GPAs in sixth-grade mathematics: **Retained**	The level of use of cooperative learning experienced by students in fifth grade did not affect the students' GPAs in sixth-grade mathematics.
Ho 12: No effect of level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade mathematics: **Rejected***	A moderate level of use of cooperative learning experienced by students in sixth grade led to higher GPAs in sixth-grade mathematics than did low or high levels of use.

*$p \leq .05$.

Table 22: Sixth-grade social studies.

Null Hypotheses/Results	Interpretation
Ho 13: No interaction effect between level of use of cooperative learning in fifth and sixth grades on students' GPAs in sixth-grade social studies: **Retained**	The relationship between the level of use of cooperative learning in fifth and sixth grades had no effect on students' GPAs in sixth-grade social studies.
Ho 14: No effect of level of use of cooperative learning in fifth grade on students' GPAs in sixth-grade social studies: **Retained**	The level of use of cooperative learning experienced by students in fifth grade did not affect the students' GPAs in sixth-grade social studies.
Ho 15: No effect of level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade social studies: **Retained**	The level of use of cooperative learning experienced by students in sixth-grade did not affect the students' GPAs in sixth-grade social studies.

Table 23: Sixth-grade science.

Null Hypotheses/Results	Interpretation
Ho 16: No interaction effect between level of use of cooperative learning in fifth and sixth grades on students' GPAs in sixth-grade science: **Retained**	The relationship between the level of use of cooperative learning in fifth and sixth grades had no effect on students' GPAs in sixth-grade science.
Ho 17: No effect of level of use of cooperative learning in fifth grade on students' GPAs in sixth-grade science: **Retained**	The level of use of cooperative learning experienced by students in fifth grade did not affect the students' GPAs in sixth-grade science.
Ho 18: No effect of level of use of cooperative learning in sixth grade on students' GPAs in sixth-grade science: **Retained**	The level of use of cooperative learning experienced by students in sixth grade did not affect the students' GPAs in sixth-grade science.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Introduction

This chapter includes a summary of the rationale for and purpose of the study, the research methods and procedures, and the results. These summaries are followed by conclusions and discussion regarding the study findings. The chapter ends with recommendations for further research and the researcher's reflections.

Summary

Rationale

The achievement-related attitudes, values, and performance of young adolescents deteriorate in the middle grades (Midgley et al., 1989). Researchers have studied this decrement as it relates to the transition of elementary students into middle school (Daniels, 1990; Feldhaufer et al., 1988; Fenzel, 1989a, 1990a, 1991; Fenzel & Blyth, 1986; Mergendeller & Mitman, 1985; Mitman, 1981; Rounds, 1982; Stefanich et al., 1991; Thornburg & Glider, 1984).

Role Strain Theory has been used as one framework within which to study the effect that the change from elementary school to middle school has on students' adjustment to and achievement in middle school (Fenzel, 1989a, 1990a, 1991;

Fenzel & Blyth, 1986). Role strain occurs when students hold a set of expectations about schooling that is different from that of others with whom they interact, such as their teachers or parents. When Role Strain Theory is applied to the transition to middle school, the assumption is that the less role strain the student experiences, the better will be his or her adjustment to middle school. Likewise, it is assumed that less role strain will result in higher achievement levels in middle school. This assumption led Fenzel and others to examine the effect that a match in student experiences with the organization of instruction in elementary school and middle school has on the student's adjustment to and achievement in middle school.

In their studies, Rounds (1982), Mitman (1981), and Fenzel (1989a) found that a match between the organization of instruction in elementary school and middle school positively affects students' adjustment to and achievement in middle school. In addition to a match between the organization of instruction in the two levels of schooling, the developmental appropriateness of the middle school program and social support for the student by his or her peers mediate the negative effects of role strain. Cooperative learning, considered to be developmentally appropriate and providing social support from peers, fits these needs (Carnegie Council on Adolescent Development, 1989; George et al., 1992; Lounsbury & Johnston, 1988; Muth & Alvermann, 1992). The use of cooperative learning as a means to organize instruction effectively has been shown to positively affect students' adjustment and achievement (Johnson et al., 1984; Mitman & Lambert, 1992; Slavin, 1989/90; Stevens & Durkin, 1992).

Purpose

In this study, the researcher combined the concepts from Fenzel's and Rounds's work regarding the benefits that a match between the student's experience with the organization of instruction in elementary school and in middle school has on the youth's transition to middle school with the research and literature on the use of cooperative learning at both levels of schooling. Specifically, the researcher's primary purpose in this study was to determine whether a match in the level of use of cooperative learning as the organization of instruction in both fifth and sixth grades mediated a positive adjustment to sixth grade and produced a higher achievement level in four sixth-grade subject areas (language arts, mathematics, social studies, and science), as well as a higher overall GPA. In addition, the researcher examined the effect that the level of use of cooperative learning in fifth grade (main effect) had on students' adjustment, overall achievement, and achievement in individual subject areas in sixth grade. The effect that the level of use of cooperative learning in sixth grade (main effect) had on students' adjustment, overall achievement, and achievement in the four subject areas also was studied.

The researcher assumed that, for the main effects (level of use of cooperative learning in fifth grade and level of use of cooperative learning in sixth grade) to affect students' adjustment to and achievement in sixth grade, cooperative learning must have been properly implemented. A high level of use of cooperative learning, defined as proper implementation of the distinguishing characteristics of Johnson and Johnson's model of cooperative learning, represents a move from a more

traditional, teacher-centered classroom to a more cooperative organization of instruction. In this cooperative organization of instruction, students are active versus passive learners, have more opportunity to interact with peers and to participate in decision making, and develop the values and skills necessary to assume responsibility for their own learning and the learning of others.

Methods and Procedures

Student adjustment was measured with the Student Opinion Survey (Mitman, 1981). Students' achievement was measured by means of their GPAs.

Four hundred ninety-six of the district's 891 1993-94 sixth graders participated in this study. Fifty percent of the students were male, and 50% were female. Students varied greatly in age and cognitive ability, as measured by the Cognitive Abilities Test, Grade 5.

Thirty-four of the district's 36 1992-93 fifth-grade teachers, as well as 25 sixth-grade teachers from three of the four middle schools in the district participated in the study. The Questionnaire on the Use of Cooperative Groups (Johnson & Johnson, 1982) was used to measure the level of use of cooperative learning in their classrooms.

In March 1994, the Questionnaire on the Use of Cooperative Groups was completed by the fifth- and sixth-grade teachers of the 1993-94 sixth-grade students. The Student Opinion Survey was administered to the sixth graders by their teachers. Each middle school provided the GPAs of students who were participating in the study. An ANCOVA with adjustment scores and GPAs covaried with students'

scores on the Cognitive Abilities Test, Grade 5, was performed to test the 18 null hypotheses. The findings are summarized in the following section.

Findings

Student adjustment. No statistically significant relationship (interaction effect) was found between the level of use of cooperative learning in fifth grade and in sixth grade and students' adjustment to sixth grade. The level of use of cooperative learning in fifth grade (main effect) had no significant effect on students' adjustment to sixth grade. Likewise, the level of use of cooperative learning in sixth grade (main effect) had no significant effect on students' adjustment to sixth grade.

Student achievement. No statistically significant relationship (interaction effect) was found between the level of use of cooperative learning in fifth grade and in sixth grade and students' achievement in sixth grade. The level of use of cooperative learning in fifth grade (main effect) did not affect students' achievement in sixth grade. However, the results indicated that a low level of use of cooperative learning in sixth grade (main effect) was highly and positively related to students' overall GPAs in that grade. In addition, the results differed by subject area. When students experienced low or moderate levels of use of cooperative learning in sixth-grade language arts (main effect), their GPAs in that subject were significantly higher than those of students who experienced a high level of use of cooperative learning in sixth-grade language arts. A moderate level of use of cooperative learning in sixth-grade mathematics (main effect) had a highly significant and positive effect on students' GPAs in that subject area. Level of use of cooperative learning in sixth

grade social studies and science did not affect sixth-grade students' GPAs in those subject areas.

Conclusions and Discussion

Student Adjustment

The findings indicated that neither a match in a student's experiences with cooperative learning in fifth and in sixth grade nor the level of use of cooperative learning in either fifth or sixth grade had a significant effect on students' adjustment to sixth grade. Aspects of Role Strain Theory (Fenzel, 1991) and the timing of the study help to explain these findings regarding adjustment.

Fenzel (1989c, 1989d) and Rounds (1982) hypothesized that a match in the student's experiences with the organization of instruction at the elementary and the middle school levels reduces role strain, thus creating circumstances that would promote a positive adjustment to middle school. However, role strain also can be reduced by factors other than the consistency of a student's experiences with the organization of instruction at the elementary level and the middle level of schooling. Role strain also can be reduced by (a) the student's personal coping resources, such as a stable personality and attitudes and dispositions that promote effective adaptations; (b) an environment that is a developmental match for the early adolescent; and (c) social support from peers, teachers, and parents (Fenzel, 1991). Isolating one aspect of Role Strain Theory such as the match in the organization of instruction between the two levels of schooling may not fully explain students' adjustment to middle school.

Schools and teachers do not have control over students' personalities, attitudes, and dispositions that promote effective adaptations to change. In addition, students come to school with particular attitudes about (liking/not liking) school. These attitudes are developed through students' past experiences with schooling, their ability or success in particular subject areas, and/or their personal interest in the individual subject areas. Students' personalities, ability to cope with change, and attitudes about school or certain subject areas might not be changed by their experiences with cooperative learning as the organization of instruction in either fifth or sixth grade.

Creating an environmental match for the early adolescent in middle school requires attention to a wide variety of organizational features, such as team teaching, exploratory courses, long-term teacher/student relationships through advisor/advisee programs, and parental involvement, as well as the use of cooperative learning. It is possible that the teachers in the three middle schools that participated in the study had created a supportive environment for their students by providing a developmentally appropriate program incorporating some of these organizational features. Cooperative learning is only one characteristic of a developmentally appropriate program that has been cited in the literature on middle school education. The findings from this study indicated that cooperative learning was not the solitary characteristic of a developmentally appropriate program for middle school students that promotes positive adjustment to middle school.

Reducing role strain through social support from significant others (peers, teachers, and parents) is another way to mediate a successful transition to middle school. Even though the cooperative learning model is based on social support from peers, in this study the level of use of cooperative learning in fifth and sixth grades was not related to students' adjustment to middle school. Other characteristics of a developmentally appropriate program, coupled with social support from significant others (teachers, peers, parents) and the student's own coping mechanisms, may have had more influence on the students' adjustment than did the level of use of cooperative learning.

Most studies of students' transition are conducted within the first two or three months of the school year. This allows the researcher to focus on a short period of time and examine what occurs with students during that time. Such studies help administrators, teachers, and counselors understand what to do to prepare for a successful transition. Data for this study were collected in March 1994. The passage of time from September 1993, the beginning of the school year, to March 1994 may have negated the researcher's ability to measure the effect of a match between the level of use of cooperative learning in fifth grade and in sixth grade on students' adjustment to sixth grade.

Student Achievement

The research findings also indicated that the relationship between the levels of use of cooperative learning in fifth grade and in sixth grade had no significant effect on students' overall GPAs in sixth grade. Likewise, the level of use of

cooperative learning in fifth grade did not significantly affect students' overall GPAs in sixth grade. Conducting the study late in the school year may have negated any measurable effect that the relationship between the level of use of cooperative learning in both fifth and sixth grade had on students' achievement in sixth grade, as well as the effect that the level of use of cooperative learning in fifth grade had on students' GPAs in sixth grade. However, it was found that the level of use of cooperative learning in sixth grade did have a significant effect on students' GPAs in sixth grade. A low level of use of cooperative learning yielded higher GPAs (mean = 8.49) than did a moderate level of use (mean = 7.95) or a high level of use (mean = 6.72). Students who experienced low or moderate levels of use of cooperative learning in sixth-grade language arts had significantly higher GPAs in that subject than did those who experienced a high level of use. Students who experienced a moderate level of use of cooperative learning in sixth-grade mathematics had significantly higher GPAs in that subject than those who experienced low or high levels of use. Overall, students in more traditional classrooms, in which teachers had not correctly implemented a cooperative learning organization of instruction, achieved higher GPAs.

Results in the achievement portion of this study will be discussed (a) by examining the teachers' and students' abilities to generalize a relatively new organization of instruction, cooperative learning, to the traditional classroom setting; (b) by examining the congruency of the teaching objective with the mode of instruction selected by the teacher; and (c) by reflecting on the norms that need to

be in place within schools in order to support the implementation of a new organization of instruction.

Lotan, Cohen, and Holthuis (1994) suggested that certain sociological conditions must be met before the cognitive benefits of cooperative learning as the organization of instruction can occur. These authors believed that the teacher must delegate authority to the students, that the individuals within the group must be responsible for themselves and for the performance of other group members, and that groups must be small in size. Kohn (1996) believed that cooperative classrooms are guided by a set of values that promote deep understanding of the learning, emphasize social and intellectual growth, and are centered on meeting the needs of the individual child. In these classrooms, students will interact with each other and share what they are learning. Teachers shifting to cooperative learning, which is a more student-centered than teacher-centered organization of instruction, need to pay attention to these sociological conditions in the classroom. If the values and skills necessary to support a high level of use of cooperative learning are not in place, a low to moderate level of use of cooperative learning may be a more successful organization of instruction because teachers and students will be more familiar with the values and skills of a traditional organization of instruction, thereby allowing them to decode their respective roles more easily. When a student understands his or her role as student, role strain is reduced and the youngster may have a greater chance to benefit cognitively in the classroom.

There are two schools of thought regarding the content of group work (Lotan et al., 1994). Some teachers use cooperative groups to provide practice on basic skills. These typically are tasks that an individual can complete, such as practicing addition facts, telling time, writing a descriptive paragraph, and memorizing the state capitals. Other teachers assign tasks to cooperative groups that require the information, knowledge, and problem-solving abilities of all the group members. In this study, teachers were asked how they organized the groups (heterogeneous versus homogeneous grouping, teacher-selected versus student-selected, strategies for creating positive interdependence), but they were not asked to report on the content of the group work. The appropriateness of the teaching objective assigned as group work may be a factor in determining whether a low, moderate, or high level of use of cooperative learning yields higher GPAs in sixth grade. If teachers were assigning tasks to students that were routine (practice, memorization), the need for a high level of use of cooperative learning, in which students could not succeed without relying on each other, would be diminished. Teachers participating in this study who reported low or moderate levels of use of cooperative learning in language arts and mathematics might have selected content that did not require a high level of use of cooperative learning. Because routine tasks do not require the same positive interdependence as do complex tasks, the teachers with a low level of use of cooperative learning might have created a classroom environment in which the content and the organization of instruction were congruent. This congruency allows students to understand and implement their role as learner more successfully.

Grading is one way in which teachers communicate to students which behaviors, knowledge, and skills are valued in a classroom. In this study, sixth-grade teachers tended to use a traditional grading scale to evaluate the content learned in the cooperative learning groups, rather than grading or giving incentives for group products or group process skills. This traditional method of grading may have undermined the need for collaboration as the norm in the classroom, thus creating a classroom environment in which a low to moderate level of use of cooperative learning would yield higher GPAs.

The organization of instruction in the classroom exists within a larger system called the school (Bliss, 1989). The larger organizational structure includes such factors as a clear and focused mission, policies or practices (e.g., student grouping, scheduling, grading, awards, assessments), instructional leadership, the collegiality of the staff, and support for professional growth. These organizational features either support or hinder a particular organization of instruction in the classroom.

Students who experienced low or moderate levels of use of cooperative learning might have had higher levels of achievement because the organization of the school supported an individualistic, more traditional organization of instruction. At the time this study was conducted, it was unclear whether a cooperative organization of instruction was valued in the mission and philosophy of the schools. Without a clearly articulated mission and philosophy that includes emphasis on a cooperative organization of the classroom, teachers might not value the ongoing use of cooperative learning as a means to organize curriculum, instruction, and

assessment. If the cooperative organization of instruction is not valued, teachers will not push themselves to develop the skills necessary to implement this type of organization. Principals play a vital leadership role in encouraging the implementation of new organizations of instruction (Bliss, 1989). Department chairs also provide leadership in implementing new teaching practices through modeling the new practices and team teaching (Bliss, 1989).

In 1994, interdisciplinary teaming, in which groups of teachers were assigned longer blocks of time with students to deliver integrated curricular units, was not in place in the school district where this study was conducted. These longer blocks of time would have allowed teachers more flexibility in implementing cooperative learning. Traditional 45-minutes-per-class schedules do not promote the use of cooperative learning, particularly when the content of the group work is complex. Also in 1994, grading tended to be based on individual performance on paper/pencil tests such as fill-in-the-blank or multiple-choice questions and short essays. When this type of grading/assessment practice is used, it can diminish the need to develop an overarching cooperative organization of instruction.

Bliss (1989) found that the collegial nature of the school is significant in terms of implementing a new organization of instruction. Not only is support from the principal and department chair important, but implementation also is affected by strong collegial relationships among staff members. Teachers need to see at least one colleague using cooperative learning, they require time to work together on planning curriculum and instruction, and they need to develop materials

collaboratively to implement cooperative learning in their classrooms. At the time of this study, teachers who had been trained in cooperative learning were not supported in their implementation at the building level through increased planning and collegial time.

Recommendations for Further Research

Based on the results of this study, the following recommendations are made for further research.

1. The current study should be replicated closer to the beginning of a school year (the end of September or early October) in order to negate the effects that the passage of time may have had on the effect of the level of use of cooperative learning in fifth and/or sixth grade on students' adjustment to and achievement in sixth grade.

2. An ethnographic study should be conducted, involving fewer students and teachers, with more intensive observation of the organization of instruction in the classrooms. The design should include observation by an expert in cooperative learning to determine whether (a) the sociological conditions of the classroom support a cooperative organization of instruction; (b) the content of the group work is appropriate; (c) curriculum, instruction, and assessment practices are aligned with the level of use of cooperative learning; and (d) the school norms support a cooperative organization of instruction in the classroom.

3. Proper implementation (high level of use) of the distinguishing characteristics of Johnson and Johnson's model of cooperative learning was the

independent variable in this study. The amount of time a student spends in cooperative groups was not considered. In the future, it may be useful to study what constitute examples of cooperative learning. It would also be helpful to study the effect that the amount of time a student spends experiencing cooperative learning as the organization of instruction has on his or her adjustment to and achievement in sixth grade.

4. Overall GPAs were calculated by adding a student's grades in four subject areas: language arts, mathematics, social studies, and science. Thirty-four students who received bilingual services, special education services, or remedial services were pulled out of one of these core subject areas to receive those services, thus eliminating them from the achievement portion of the study. Research on cooperative learning has indicated that the greatest gains in achievement are made by low-achieving students. It is possible that students who benefit the most from a high level of use of cooperative learning were eliminated from this study. Therefore, further research should be conducted to determine the effect that the level of use of cooperative learning has on the GPAs of low-achieving sixth graders who receive special services such as bilingual services and special education.

Reflections

The concept of level of use focuses on whether or not the teacher is technically correct when implementing a new teaching strategy. In this study, proper implementation of the distinguishing characteristics of a particular model of cooperative learning did not yield better adjustment to or higher achievement in

middle school. This indicates that administrators need to focus on a "bigger picture" when teachers are implementing a new organization of instruction at the classroom level. The big picture includes understanding the individual students' attitudes and dispositions toward change to a new level of schooling. This may require communication between staff at both levels of schooling, elementary and middle school. The big picture also includes understanding the administrator's role in creating an organization of instruction at the school level that supports the implementation of a cooperative organization of instruction at the classroom level. The administrator needs to involve teachers in developing a school mission that values and supports a cooperative organization of instruction. Schedules, interdisciplinary teaming, and assessment practices need to be designed to support the use of cooperative learning. Administrators need to assist teachers in finding time to plan together and reflect on their attempts to carry out cooperative learning in the classroom. In addition, teacher evaluation and/or supervision practices need to promote the use of cooperative groups.

As administrators supervise staff who are moving toward a more cooperative organization of instruction, they need to help teachers select appropriate objectives for group work. They need to encourage teachers to develop assessment practices that promote cooperation. Group products and the students' behavior in the group become part of the assessment process. The administrator needs to move away from a narrow focus on proper or correct implementation of a model of instruction to

creating a school environment and practices that support teachers' efforts to change at the classroom level.

APPENDICES

APPENDIX A

STUDENT OPINION SURVEY

STUDENT OPINION SURVEY

Name_____ Date_____
Middle School_____ Gender (M/F)_____
5th grade teacher: _____
6th grade team: _____ Birthdate: _____ Age____

The questions below are aimed at finding out how you feel about your school. Your answers will help us to study what happens when people go from elementary school to middle school. As the study could lead to important changes in education, we need your honest answers. We promise that what you say will remain a secret between the researchers and you; no one else will see what you say.

Each question will be read out loud. After hearing the question, please answer it as quickly as possible.

Thank you very much for your part in this study.

Please respond to each question below by marking it with an X. If you feel the statement is true, mark the space after T. If you are uncertain, mark the space after U, and if it is false, then mark the space after F. For example, if you feel happy at school, then you would mark your questionnaire as follows:

I feel happy at school. T[X] U[ ] F[ ]

1.	I look forward to coming to school each day.	T[ ] U[ ] F[ ]
2.	My teachers take into account what I need and what I'm interested in.	T[ ] U[ ] F[ ]
3.	I wish we were free to do things our own way instead of being told exactly what to do.	T[ ] U[ ] F[ ]
4.	A lot of what we are supposed to do at this school doesn't make sense.	T[ ] U[ ] F[ ]
5.	My teachers are helping me to learn and understand.	T[ ] U[ ] F[ ]
6.	In school I am often able to work with people I like.	T[ ] U[ ] F[ ]
7.	I usually feel quite relaxed at school.	T[ ] U[ ] F[ ]
8.	I do not really enjoy anything about school.	T[ ] U[ ] F[ ]
9.	My teachers really support me.	T[ ] U[ ] F[ ]

10.	My teachers are friendly towards me.	T[ ] U[ ] F[ ]
11.	When exams are due, I feel quite confident that I will do well.	T[ ] U[ ] F[ ]
12.	I like my teachers.	T[ ] U[ ] F[ ]
13.	I get upset when my teachers don't come to help me when I need it.	T[ ] U[ ] F[ ]
14.	I am quite satisfied with how my schoolwork is going.	T[ ] U[ ] F[ ]
15.	I am accepted and liked by most of the kids in my class.	T[ ] U[ ] F[ ]
16.	I like school better than most other kids do.	T[ ] U[ ] F[ ]
17.	My teachers are friendly towards me.	T[ ] U[ ] F[ ]
18.	My teachers take into account what I need and what I am interested in.	T[ ] U[ ] F[ ]
19.	At this school I don't have as many friend as I would like.	T[ ] U[ ] F[ ]
20.	During exams I worry that I might fail or do badly.	T[ ] U[ ] F[ ]
21.	A good deal of schoolwork is just to keep us busy.	T[ ] U[ ] F[ ]
22.	The way this school is run leaves me so confused, I don't know where to turn.	T[ ] U[ ] F[ ]
23.	I tense up when the teachers ask me questions in class discussion.	T[ ] U[ ] F[ ]
24.	In this school people like me don't have any luck.	T[ ] U[ ] F[ ]
25.	Students have input into what happens in this school.	T[ ] U[ ] F[ ]
26.	I wish we were free to do things our own way instead of being told exactly what to do.	T[ ] U[ ] F[ ]
27.	I am making good progress with my work.	T[ ] U[ ] F[ ]
28.	I think that people like me will never do well at this school no matter how hard we try.	T[ ] U[ ] F[ ]
29.	During exams I worry a lot about how I'm doing.	T[ ] U[ ] F[ ]
30.	I like school better than most other kids.	T[ ] U[ ] F[ ]

31.	Nobody in this school seems to notice me or care what happens to me.	T[ ] U[ ] F[ ]
32.	It is hard for me to do as well at school as my parents and teachers expect.	T[ ] U[ ] F[ ]
33.	Normally I feel quite relaxed at school.	T[ ] U[ ] F[ ]
34.	My teachers are friendly towards me.	T[ ] U[ ] F[ ]
35.	I am often afraid I will make a fool of myself in class.	T[ ] U[ ] F[ ]
36.	I'm happy to be going to this school.	T[ ] U[ ] F[ ]

APPENDIX B

QUESTIONNAIRE ON THE USE OF COOPERATIVE GROUPS

QUESTIONNAIRE ON THE USE OF COOPERATIVE GROUPS

Name: _____

School: _____ Grade: _____

Subject Area(s) in Which You Use Cooperative Learning:

_____

_____

What percentage of total class time do you spend in cooperative learning groups per week? (Note: Think of a student's total exposure to cooperative learning groups per week, subject areas combined.)

1. _____ No class time
2. _____ Less than 10% of the time
3. _____ 10%-25% of the time
4. _____ 26%-50% of the time
5. _____ 51%-75% of the time
6. _____ More than 76% of the time

If you do not use cooperative learning groups (response 1) in your classroom, DO NOT answer questions 7-33. If you use cooperative learning groups in your classroom (responses 2-6) please continue with question 7 and complete this questionnaire.

_____

Please complete the following information on your use of cooperative learning groups. Circle the answers for each statement.

HOW DO YOU ASSIGN STUDENTS TO COOPERATIVE LEARNING GROUPS?

_____

Key: C = Consistently U = Usually S = Sometimes R = Rarely

_____

7.	Students choose who they want to work with.	C	U	S	R
8.	I assign students of the same ability to a group.	C	U	S	R
9.	I assign students of different abilities to a group.	C	U	S	R
10.	Students are randomly assigned to groups.	C	U	S	R

WHAT METHODS DO YOU USE TO ESTABLISH POSITIVE GOAL INTERDEPENDENCE IN GROUPS?

Key: C = Consistently U = Usually S = Sometimes R = Rarely

11.	Each member in the group must reach their goal in order for the group to reach their goal (e.g., one paper from the group).	C	U	S	R
12.	Bonus points are added or some other reward is given to all group members when everyone in the group achieves the established criteria.	C	U	S	R
13.	Group members are assigned roles in order to complete a task (e.g., recorder).	C	U	S	R
14.	Groups are in competition with other groups.	C	U	S	R
15.	Students establish a mutual identity through a name, identity, flag, or motto.	C	U	S	R
16.	Groups are placed in a fantasy situation in order to complete a task.	C	U	S	R
17.	Group members share one set of materials.	C	U	S	R

BEFORE STUDENTS BEGIN WORKING ON AN ASSIGNMENT, DO YOU TELL THEM HOW THEIR WORK WILL BE EVALUATED (e.g., CRITERIA OR COMPARISON TO PEERS)? (Item 18) C U S R

WHEN SOLVING PROBLEMS OR ANSWERING QUESTIONS, HOW DO STUDENTS REACH CONSENSUS IN COOPERATIVE GROUPS?

Key: C = Consistently U = Usually S = Sometimes R = Rarely

19.	Students make little attempt to reach consensus and turn in separate answers.	C	U	S	R
20.	A few leaders dominate the group and their point of view is accepted without challenge.	C	U	S	R

21. Students argue their point of view and change their minds only on the basis of data. C U S R

22. All students share information and agree on one answer quickly. C U S R

HOW DO YOU PROMOTE THE MASTERY OF INTERPERSONAL AND GROUP SKILLS BY STUDENTS?

Key: C = Consistently U = Usually S = Sometimes R = Rarely

---

23. Students are told the social skills they need to use in cooperative groups but little feedback is given to them on their use. C U S R

24. The social skill is defined and practiced. Groups are observed and given feedback on them. C U S R

25. The social skill is defined, practiced, and monitored. C U S R

HOW IS GROUP PROCESSING IN THE COOPERATIVE LEARNING GROUPS CONDUCTED IN YOUR CLASSROOM?

Key: C = Consistently U = Usually S = Sometimes R = Rarely

---

26. My schedule does not allow time for groups to process. C U S R

27. My students discuss how well they worked with each other. C U S R

28. I have several structured ways for students to process in groups (e.g., rating scale continuum). C U S R

29. I structure the processing as a part of the lesson and students turn in processing assignments with their other work. C U S R

HOW DO YOU EVALUATE STUDENTS' WORK?

Key: C = Consistently U = Usually S = Sometimes R = Rarely

30.	Norm-referenced evaluation system where individual students' performance is compared to the performance of other students.	C	U	S	R
31.	Criteria-referenced evaluation system where students' individual work is compared against a preset criteria.	C	U	S	R
32.	Criteria-referenced evaluation system where a single group's product is compared against a preset criteria.	C	U	S	R
33.	Criteria-referenced evaluation system where students are evaluated on the basis of individual work and the combined efforts of the members of their group, using a preset criteria (e.g., bonus points).	C	U	S	R

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE. PLEASE RETURN THIS QUESTIONNAIRE TO _____.

APPENDIX C

RAW DATA

Table C1: Ages (in months) of students participating in the study.

# of Months	Frequency	Percent	Cumulative Percent
134	1	.2	.2
137	5	1.0	1.2
138	15	3.0	4.2
139	15	3.0	7.3
140	35	7.1	14.3
141	45	9.1	23.4
142	29	5.8	29.2
143	38	7.7	36.9
144	38	7.7	44.6
145	31	6.3	50.8
146	33	6.7	57.5
147	26	5.2	62.7
148	24	4.8	67.5
149	31	6.3	73.8
150	21	4.2	78.0
151	27	5.4	83.5
152	25	5.0	88.5
153	16	3.2	91.7
154	10	2.0	93.8
155	8	1.6	95.4
156	6	1.2	96.6
157	4	.8	97.4
158	3	.6	98.0
159	3	.6	98.6
160	2	.4	99.0
161	2	.4	99.4
162	2	.4	99.8
165	1	.2	100.0
Total	496	100.0	

Mean = 146.069, Median = 145.00, Range = 31 months

Table C2: Distribution of scores on the Cognitive Abilities Test, 5th Grade.

Verbal Score	Frequency	Percent	Cumulative Percent
16	1	.2	.2
24	1	.2	.4
27	1	.2	.6
28	2	.4	1.0
29	2	.4	1.4
31	3	.6	2.0
32	1	.2	2.2
33	1	.2	2.4
35	2	.4	2.8
37	3	.6	3.4
39	1	.2	3.6
40	3	.6	4.2
41	3	.6	4.8
43	5	1.0	5.8
44	2	.4	6.3
45	4	.8	7.1
48	4	.8	7.9
49	4	.8	8.7
51	4	.8	9.5
52	9	1.8	11.3
53	4	.8	12.1
55	6	1.2	13.3
56	10	2.0	15.3
57	7	1.4	16.7
59	6	1.2	17.9
60	6	1.2	19.2
61	11	2.2	21.4
63	18	3.6	25.0
64	7	1.4	26.4
65	14	2.8	29.2
67	10	2.0	31.3

Table C2: Continued.

Verbal Score	Frequency	Percent	Cumulative Percent
68	13	2.6	33.9
69	23	4.6	38.5
71	16	3.2	41.7
72	19	3.8	45.6
73	21	4.2	49.8
75	22	4.4	54.2
76	16	3.2	57.5
77	20	4.0	61.5
79	24	4.8	66.3
80	15	3.0	69.4
81	24	4.8	74.2
83	19	3.8	78.0
84	15	3.0	81.0
85	19	3.8	84.9
87	15	3.0	87.9
88	18	3.6	91.5
89	13	2.6	94.2
91	9	1.8	96.0
92	7	1.4	97.4
93	5	1.0	98.4
95	3	.6	99.0
96	2	.4	99.4
97	3	.6	100.0
Total	496	100.0	

Mean = 71.655, Median = 75.00, Range in Verbal Scores = 81

Table C2: Continued.

Quantitative Score	Frequency	Percent	Cumulative Percent
17	1	.2	.2
22	1	.2	.4
25	3	.6	1.0
27	2	.4	1.4
30	1	.2	1.6
32	2	.4	2.0
33	1	.2	2.2
35	3	.6	2.8
37	2	.4	3.2
38	5	1.0	4.2
40	4	.8	5.0
42	2	.4	5.4
43	1	.2	5.6
45	6	1.2	6.9
47	5	1.0	7.9
48	1	.2	8.1
50	10	2.0	10.1
51	1	.2	10.3
52	15	3.0	13.3
53	11	2.2	15.5
55	9	1.8	17.3
56	1	.2	17.5
57	8	1.6	19.2
58	14	2.8	22.0
60	14	2.8	24.8
62	16	3.2	28.0
63	17	3.4	31.5
65	18	3.6	35.1
67	11	2.2	37.3
68	13	2.6	39.9
70	14	2.8	42.7

Table C2: Continued.

Quantitative Score	Frequency	Percent	Cumulative Percent
72	23	4.6	47.7
73	21	4.2	51.6
75	25	5.0	56.7
77	24	4.8	61.5
78	28	5.6	67.1
80	26	5.6	72.8
82	20	4.0	76.8
83	18	3.6	80.4
85	16	3.2	83.7
86	1	.2	83.9
87	10	2.0	85.9
88	23	4.6	90.0
90	16	3.2	93.8
92	11	2.2	96.0
93	8	1.6	97.6
95	7	1.4	99.0
97	4	.8	99.8
09	1	.2	100.0
Total	496	100.0	

Mean = 70.702, Median = 73.00, Range in Quantitative Scores = 81

Table C3: Students' GPAs in four subject areas.

Language Arts			
GPA	Frequency	Percent	Cumulative Percent
E	7	1.4	1.4
D-	1	.2	1.6
D	12	2.4	4.1
D+	10	2.2	6.4
C-	10	2.0	8.4
C	33	6.7	15.2
C+	28	5.6	20.9
B-	34	6.9	27.9
B	92	18.5	46.8
B+	66	13.3	60.4
A-	84	16.9	77.6
A	105	21.6	99.2
A+	4	.8	100.0
Missing	9	1.8	
Total	496	100.0	

Mean = 8.3
Median = 9.0
Range = 12 points

Table C3: Continued.

Mathematics			
GPA	Frequency	Percent	Cumulative Percent
E	15	3.0	3.0
D-	9	1.8	4.8
D	13	2.6	7.5
D+	12	2.4	9.9
C-	32	6.5	16.3
C	43	8.7	25.0
C+	27	5.4	30.4
B-	42	8.5	38.9
B	102	20.6	59.5
B+	70	14.1	73.6
A-	61	12.3	85.9
A	67	13.5	99.4
A+	3	.6	100.0
Total	496	100.0	

Mean = 7.458
Median = 8.0
Range = 12 points

Table C3: Continued.

Social Studies			
GPA	Frequency	Percent	Cumulative Percent
E	8	1.6	1.7
D-	9	1.8	3.6
D	8	1.7	5.4
D+	13	2.6	8.2
C-	15	3.0	11.4
C	32	6.5	18.2
C+	37	7.5	26.2
B-	45	9.1	35.8
B	71	14.3	51.1
B+	42	8.5	60.1
A-	75	15.1	76.2
A	99	20.0	97.4
A+	12	2.4	100.0
Missing	30	6.0	
Total	496	100.0	

Mean = 8.047
Median = 8.0
Range = 12 points

Table C3: Continued.

Science			
GPA	Frequency	Percent	Cumulative Percent
E	23	4.6	4.7
D-	11	2.2	6.9
D	20	4.0	11.0
D+	7	1.4	12.4
C-	28	5.6	18.1
C	29	5.8	24.0
B-	36	7.3	36.0
B	67	13.5	49.7
B+	55	11.1	60.9
A-	71	14.3	75.4
A	116	23.4	99.0
A+	5	1.0	100.0
Missing	5	1.0	
Total	496	100.0	
Total	496	100.0	

Mean = 7.731
Median = 9.0
Range = 12 points

Table C4: Distribution of scores on the Student Opinion Survey.

Score	Frequency	Percent	Cumulative Percent
38	2	.4	.4
39	1	.2	.6
40	4	.8	1.4
41	3	.6	2.1
42	9	1.8	3.9
43	10	2.0	6.0
44	8	1.6	7.6
45	15	3.0	10.7
46	12	2.4	13.2
47	16	3.2	16.5
48	13	2.6	19.2
49	15	3.0	22.3
50	16	3.2	25.6
51	14	2.8	28.5
52	16	3.2	31.8
53	9	1.8	33.6
54	19	3.8	37.5
55	18	3.6	41.2
56	8	1.6	42.9
57	9	1.8	44.7
58	19	3.8	48.7
59	20	4.0	52.4
60	23	4.6	57.5
61	14	2.8	60.4
62	16	3.2	63.7
63	16	3.2	67.0
64	14	2.8	69.9
65	9	1.8	71.8
66	12	2.4	74.2
67	9	1.8	76.1
68	9	1.8	77.9

Table C4: Continued.

Score	Frequency	Percent	Cumulative Percent
69	9	1.8	79.8
70	8	1.6	81.4
71	6	1.2	82.7
72	15	3.0	85.8
73	9	1.8	87.6
74	3	.6	88.2
75	5	1.0	89.3
76	8	1.6	90.9
77	6	1.2	92.2
78	4	.8	93.0
79	3	.6	93.6
80	5	1.0	94.6
81	3	..6	95.3
82	1	.2	95.5
83	1	.2	95.7
84	1	.2	95.9
85	4	.8	96.7
86	4	.8	97.5
88	2	.4	97.9
89	1	.2	98.1
90	2	.4	98.6
91	3	.6	99.2
92	1	.2	99.4
93	3	.6	100.0
Missing	11	2.4	
Total	496	100.0	

Mean = 59.639
Median = 59.00
Range = 55.00
Standard Deviation = 11.772

REFERENCES

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Alexander, W. M. (1987). Toward schools in the middle: Progress and problems. Journal of Curriculum and Supervision, 2(4), 324-325.

Bandura, A. (1986). Social foundations of thought and actions: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.

Bempechat, J., & Wells, A. S. (1989). Trends and issues in urban and minority education, 1989. Promoting the achievement of at-risk students. Washington, DC: Office of Educational Research and Improvement.

Berg-Cross, L., & Flanagan, R. (1988). Effects of an orientation program on mobile transfer students. Journal of Early Adolescence, 8(3), 311-324.

Bliss, T. (1989). The use of group work in high school social studies. Theory and Research in Social Education, 17(4), 303-315.

Brookover, W. B., & Erickson, E. L. (1975). Sociology of education. Homewood, IL: Dorsey Press.

Campbell, D. T., & Stanley, J. C. (1966). Experimental and quasi-experimental designs for research. Chicago: Rand McNally.

Campbell, E. (1989, September). In Saskatchewan--Its middle years. Middle School Journal, 11-12.

Carnegie Council on Adolescent Development, Task Force on Education of Young Adolescents. (1989). Turning points: Preparing American youth for the 21st century. Washington, DC: Author.

Cawelti, G. (1988, November). Middle schools a better match with early adolescent needs. ASCD Curriculum Update, 1-12.

Cognitive Abilities Test, Grade 5. (1987). New York: McGraw-Hill.

Cohen, E. G. (1986). Designing group work: Strategies for the heterogeneous classroom. New York: Teachers College Press.

Costar, J. W. (1985). Teacher-advisor in the middle school guidance program. Michigan Middle School Journal, 11(1), 14-16.

Crockett, L. J., Petersen, A. C., Graber, J. A., Schulenberg, J. E., & Ebata, A. (1989). School transition and adjustment during early adolescence. Journal of Early Adolescence, 9(3), 181-210.

Cuban, L. (1989). At-risk students: What teachers and students can do. Educational Leadership, 45(3), 29-33.

Daniels, L. G. (1990). Operationalization of a frame of reference for studying organizational culture in middle schools. Paper presented at the annual meeting of the Southwest Educational Research Association, Austin, TX.

Dornbusch, S. M., Petersen, A. C., & Hetherington, E. M. (1991). Projecting the future of research on adolescence. Journal of Research on Adolescence, 1(1), 7-17.

Duran, P. E., & Cherrington, A. (1992). The effects of cooperative group work versus independent practice on the learning of some problem-solving strategies. School Science and Mathematics, 92(2).

Eccles, J. S., & Midgley, C. (1989). Stage environment fit: Developmentally appropriate classrooms for early adolescents. In R. E. Ames & C. Ames (Eds.), Research in motivation in education (Vol. 3). New York: Academic Press.

Eccles, J. S., Midgley, C., & Adler, T. F. (1984). Grade-related changes in the school environment: Effects on achievement motivation. In J. Nicholls & M. L. Maehr (Eds.), Advances in motivation and achievement (Vol. 3, pp. 283-331). Greenwich, CT: JAI Press.

Farivar, S. (1991). Intergroup relations in cooperative learning groups. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.

Farivar, S. (1993). Group work: Small group productivity. Research review. Social Studies Review, 34(2), 58-63.

Feldhaufer, H., Midgley, C., & Eccles, J. S. (1988). Student, teacher, and observer perceptions of the classroom environment before and after the transition to junior high school. Journal of Early Adolescence, 8(2), 133-156.

Felzer, R. D., Ginter, M., & Primavera, J. (1982). Primary prevention during school transitions: Social support and environmental structure. American Journal of Community Psychology, 10, 270-290.

Fenzel, L. M. (1989a). An ecological study of the changes in student role strains during transition to middle school. Research paper presented at the biennial meeting of the Society of Research in Child Development, Kansas City, MO.

Fenzel, L. M. (1989b). The effects of role strains and perceived competence on self-esteem and school performance of sixth graders in middle school. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Fenzel, L. M. (1989c). Role strains in early adolescence: A model for investigating school transition stress. Journal of Early Adolescence, 9(1-2), 13-33.

Fenzel, L. M. (1989d). Role strains and the transition to middle school: Longitudinal trends and sex differences. Journal of Early Adolescence, 9(3), 211-226.

Fenzel, L. M. (1990a). Longitudinal trends in the effect of age status on role strain, self-esteem and GPA during transition to middle school. Research report presented at the biennial meeting of the Society for Research on Adolescence, Atlanta, GA.

Fenzel, L. M. (1990b). A prediction of intrinsic motivation among early adolescents: A mediational model involving self-esteem and strain. Research report presented at the biennial meeting of the Society for Research on Adolescence, Atlanta, GA.

Fenzel, L. M. (1991). A prospective study of the relationship among role strain, self-esteem, competence, and social support in early adolescence. Paper presented at the biennial meeting of the Society for Research on Adolescence, Seattle, WA.

Fenzel, L. M., & Blyth, D. A. (1986). Individual adjustment to school transitions: An exploration of the role of supportive peer relations. Journal of Early Adolescence, 6(4), 315-329.

Gardner, P., & Carpenter, R. (1985). A needs assessment for transition from elementary schools to middle schools. Vancouver: Educational Research Institute of British Columbia.

George, P. S. (1983). The Theory Z school: Beyond effectiveness. Columbus, OH: National Middle School Association.

George, P. S. (1988). Education 2000: Which way is the middle school? Clearing House, 62, 14-17.

George, P. S., Stevenson, C., Thomason, J., & Beane, J. (1992). The middle school–and beyond. Alexandria, VA: Association for Supervision and Curriculum Development.

Georgiady, N. P., & Romano, L. G. (1973). Do you have a middle school? Educational Leadership.

Hargreaves, A. (1986). Two cultures of schooling: The case of middle schools. Philadelphia, PA: Falmer Press.

Harris, D. J., Dyer, P. A., & Tracz, S. M. (1988). Fostering a belief in destiny by experiencing success in school for at-risk students. Paper presented at the annual meeting of the California Educational Research Association, San Diego, CA.

Hord, S. M., Rutherford, W. L., Huling-Austin, L., & Hall, G. E. (1987). Taking charge of change. Alexandria, VA: Association for Supervision and Curriculum Development.

Jackson, A. W., & Hornbeck, D. W. (1989). Educating young adolescents: Why we must restructure middle grade schools. American Psychologist, 44, 831-836.

James, C. B. (1989). Cooperative learning in the classroom. Social Studies, 80(3), 98-101.

Johnson, D. W., & Johnson, R. T. (1986). Questionnaire on the use of cooperative groups. Minneapolis, MN: Cooperative Learning Center.

Johnson, D. W., & Johnson, R. T. (1989/90). Social skills for successful group work. Educational Leadership, 47(4).

Johnson, D. W., Johnson, R. T., Holubec, E. J., & Roy, P. (1984). Circles of learning: Cooperation in the classroom. Alexandria, VA: Association for Supervision and Curriculum Development.

Johnson, J. H., & Markle, G. C. (1986). What research says to the middle level practitioner. Columbus, OH: National Middle School Association.

Jones, R. M. (1984). Easing the transition from elementary school to middle school education. Dissertation Abstracts International, 46, 1976A.

Kagan, S. (1989/90). The structural approach to cooperative learning. Educational Leadership, 47(4), 12-15.

Kohn, A. (1996). Beyond discipline: From compliance to community. Alexandria, VA: Association for Supervision and Curriculum Development.

Li, A. K., & Adamson, G. (1992). Secondary students' preferred learning style: Cooperative, competitive, or individualistic? Journal of the Education of the Gifted, 16(1), 46-54.

Lotan, R. A., Cohen, E. G., & Holthuis, N. (1994). Talking and working together: Conditions for learning in complex instruction. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

Lounsbury, J. H., & Johnston, J. H. (1988). Life in the three sixth grades. Reston, VA: National Association of Secondary School Principals.

Lyman, L., & Foyle, H. C. (1989). Cooperative learning in the middle school. Paper presented at the annual Kansas Symposium for Middle Level Education.

Manning, M. L., & Lucking, R. (1991). The what, why and how of cooperative learning. The Social Studies, 82(3), 120-124.

McEwin, C. K., & Cross, A. H. (1982). A comparative study of perceived victimization, perceived anonymity, self-esteem and preferred teacher characteristics of gifted and talented and nonlabeled early adolescents. Journal of Early Adolescence, 2, 247-254.

Mergendeller, J. R., & Mitman, A. (Far West Laboratory for Educational Research and Development). (1985). The relationship of middle school program features, instructional strategy, instructional performance, and student engagement. Journal of Early Adolescence, 5(2), 183-196.

Meyer, L. H., Harootunia, B., Williams, D., & Steinberg, A. (1991). Inclusive middle school practices: Shifting from deficit to support models. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.

Middle Grade Task Force. (1987). Caught in the middle: Educational reform for the young adolescents in California public schools. Sacramento: California State Department of Education.

Miller, J. W. (1992). The new American school: A preview. Streamliner Seminar (National Association of Elementary School Principals), 1(1).

Mitman, A. L. (1981). Student perceptions of transition and school. Junior high transition study: Vol. 3. Ecological perspectives for successful school practice. San Francisco, CA: Far West Laboratory for Educational Research and Development.

Mitman, A. L., & Lambert, V. (1992). Instructional challenge: A casebook for middle grades educators. Irvine: California League of Middle Schools/Far West Laboratory for Educational Research and Development.

Mitman, A. L., Lash, A. A., & Mergendeller, J. R. (Far West Laboratory for Educational Research and Development). (1985). The relationship of school program features to the attitude and performance of early adolescents. Journal of Early Adolescence, 5(9), 161-182.

Musial, G. G. (1992). John Dewey and current pedagogical practices: Is Dewey's pedagogy implemented today? Unpublished doctoral dissertation, Michigan State University.

Muth, K. D., & Alvermann, D. E. (1992). Teaching and learning in the middle grades. Needham Heights, MA: Allyn & Bacon.

Nicholls, J. (1989). The competitive ethos and democratic education. Cambridge, MA: Harvard University Press.

Oakes, J. (1985). Keeping track: How schools structure inequities. New Haven, CT: Yale University Press.

Odynak, E. (1985). Review of cooperative learning research and methods. Discussion paper prepared for the Ad-Hoc Committee of Multiculturalism and Education. Secretary of State, Edmonton.

Ornstein, A. C. (1992). The role of the middle schools. Streamlined Seminar (National Association of Elementary School Principals), 10(5).

Powel, W. W., & Romano, L. G. (1988). Evaluation criteria for a middle school. East Lansing: Michigan Association of Middle School Educators.

Power, C., & Cotterell, J. (1981). Changes in students in transition from primary to secondary school (Educational Research and Development Committee Report No. 27). Canberra: Australian Government Publishing Service.

Reuman, D. A., & MacIver, D. J. (1994). Effects of instructional grouping on 7th graders' academic motivation and achievement. Baltimore, MD: Center for Research on Effective Schooling of the Disadvantaged.

Romano, L. G., Georgiady, N. P., & Heath, J. E. (1973). Selected readings on an emerging school program. Chicago, IL: Nelson-Hall.

Romano, L. G., Hedburg, J. D., & Lulich, M. (1973). Developmental characteristics of pre-adolescents and their implications. In The middle school. Chicago, IL: Nelson-Hall.

Rounds, T. S. (1982). Organization of instruction: Elementary school-junior high school transition study: Vol. 2. Ecological perspectives for successful schooling practices. San Francisco, CA: Far West Laboratory for Educational Research and Development.

Sharan, Y., & Sharan, S. (1989/90). Group investigation expands cooperative learning. Educational Leadership, 47(4), 17-21.

Simons, J. (1991). Learning controversy: A situational perspective. Bethesda, MD: ERIC.

Slavin, R. E. (1981). Synthesis of research on cooperative learning. Educational Research, 40(5), 71-82.

Slavin, R. E. (1987a). Ability grouping and student achievement in elementary school: A best-evidence synthesis. Review of Educational Research, 57, 293-336.

Slavin, R. E. (1987b). Cooperative learning and the cooperative school. Educational Leadership, 47(3), 7-13.

Slavin, R. E. (1987c). Cooperative learning teams: What research says to the teacher (2nd ed.). Washington, DC: National Education Association.

Slavin, R. E. (1988). Cooperative learning and student achievement. Educational Leadership, 46(2), 31-34.

Slavin, R. E. (1989/90). Research on cooperative learning: Consensus and controversy. Educational Leadership, 47(4), 52-54.

Slavin, R. E. (1991). Are cooperative learning and "untracking" harmful to the gifted? Response to Allen. Educational Leadership, 48(6), 68-71.

Slavin, R. E., & Madden, N. A. (1987). Effective classroom programs for students at risk. Baltimore, MD: Center for Research on Elementary and Middle Schools.

Slavin, R. E., & Madden, N. A. (1989). What works for students at risk: A research synthesis. Educational Leadership, 46(5), 4-13.

Slavin, R. E., Madden, N. A., & Stevens, R. J. (1989/90). Cooperative learning models for the 3 "R's". Educational Leadership, 47(4), 22-28.

SPSS, Inc. (1990). SPSS reference guide. Chicago, IL: Author.

Stefanich, G. P., Wills, F. A., & Buss, R. R. (1991). The use of interdisciplinary teaming and its influence on student self-concept in middle schools. Journal of Early Adolescence, 11(4), 404-419.

Stevens, R. J., & Durkin, S. (1992). Student team reading and student team writing in middle schools. Two evaluations. Baltimore, MD: Center for Research on Effective Schooling for Disadvantaged Students, Johns Hopkins University.

Stevens, R. J., & Slavin, R. E. (1992). The cooperative elementary school: Effects on student achievement, attitudes and social relationships. Baltimore, MD: Center for Research on Effective Schooling for Disadvantaged Students, Johns Hopkins University.

Thornburg, H. D., & Glider, P. (1984). Dimensions of early adolescent social perceptions and preferences. Journal of Early Adolescence, 4(4), 387-406.

Vygotsky, L. S. (1878). Mind in society: The development of higher mental processes. Cambridge, MA: Harvard University Press.

Wayne State University. (1990). Detroit, Michigan: Wayne State University 1990 census. Detroit: University Center for Urban Studies, Southeastern Michigan Council of Government.

Webb, N. (1985). Student interaction and learning in small groups. In R. E. Slavin, S. Sharan, S. Kagan, C. Herts-Lazarowitz, C. Webb, & r. Schumuch (Eds.), learning to cooperate, Learning to learn. New York: Plenum.

Wood, K. D. (1988, September). Meeting the social needs of adolescents through cooperative learning. Middle School Journal, 32-34.