

THE EFFECTS OF INTERDISCIPLINARY TEAMING AND PARENT CONTACTS
ON THE
ACADEMIC ACHIEVEMENT, MOTIVATION, ATTENDANCE, AND SUSPENSION RATE OF
STUDENTS IDENTIFIED TO BE AT-RISK OF REPEATING THE
NINTH GRADE

By

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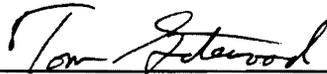
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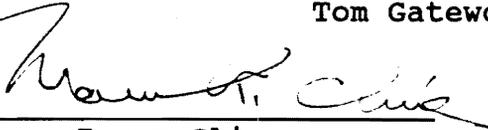
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Curriculum and Instruction

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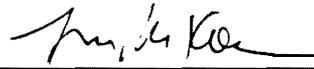
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(ABSTRACT)

A Quasi-experimental Pretest - Posttest design was used to determine whether interdisciplinary teaming, positive parent contacts, negative parent contacts, and gender had an effect on the academic achievement, motivation, attendance, and suspension rate of students identified to be at-risk of repeating the ninth grade. Participants in this study were 100 students identified to be at-risk of repeating the ninth grade, on the basis of poor academic performance during the eighth grade year. Fifty of these students participated, through an application process, in the treatment group. Students were selected for the program because they had poor grades and had been referred by counselors, teachers, or parents. This treatment group received interdisciplinary teaming of the four core subject areas (math, science, English, and social studies) and frequent parent contacts during the ninth grade year.

An additional fifty students, composing the control group, were selected by a matching process on the IOWA Tests of Basic Skills composite score, composite grade point average from the eighth grade, subject area grade point average in the core subjects (math, science, and English), and gender. Students in the control group followed a traditional departmentalized schedule during the ninth grade year.

Statistical analysis included descriptive statistics, analysis of covariance, and multiple regression analysis techniques. Positive parent contacts emerged as having a statistically significant role in accounting for the variance in academic achievement and attendance. Additionally, negative parent contacts were found to have a significant effect on suspension rate.

Through the implementation of interdisciplinary teaming, the traditionally departmentalized high school may be reorganized so as to provide the frequent contact with parents that is necessary to produce an effect on academic achievement and attendance. Although teaming itself was found only to have a significant effect on attendance, there are other advantages to teaming that go beyond the scope of this study that would certainly be worth investigating.

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CHAPTER 1

Introduction

"The American secondary school is a unique achievement. No other nation has attempted to provide free, universal education for all children and youth to age eighteen" (Faunce & Munshaw, 1965, p. 1). However, despite an enrollment exceeding ninety per cent of young people through age seventeen (Boyer, 1983), nearly one-third of these youth leave secondary school before graduation (McDill et al, 1986). "Our central failure in the schools has been due to our apparent inability to gear our curricula, and to adapt our methods of teaching, to the varying needs, interests, abilities, and plans of the individual learners" (Faunce & Munshaw, 1965, p. 2). This chapter addresses the reasons why the American secondary school is no longer effective and identifies interdisciplinary teaming as an alternative strategy to better meeting the needs of individual students.

American secondary schools emerged with the establishment of the Boston Latin Grammar School in 1635. Soon after, a wave of educational reform was reflected by the increasing presence of similar schools, simply called Latin Grammar Schools (Faunce & Munshaw, 1965). At the core

of the curriculum were the classical languages of Latin and Greek which were taught primarily from textbooks. Thus the textbook, not the teacher, dictated the material presented. Instruction typically occurred in one room schools where all students participated regardless of age (Kilebard, 1987).

Although publicly supported, the Latin schools admitted only boys who were intellectually capable (Boyer, 1983). Of primary importance, after all, was the preparation of these elite individuals for admission to colleges and universities (Sizer, 1964).

During the middle 1700's, American schools moved away from the purely classical nature of the Latin schools and attempted to provide a practical component. In addition to the classical languages, vocational courses were added to the curriculum. Thus, the academies, which were privately funded, and the publicly funded common schools emerged (Sizer, 1964). Because the academies were privately funded, they continued to cater to an elite paying clientele. However, for the first time, girls were not excluded from secondary education (Faunce & Munshaw, 1965). Still, it was only the academically and intellectually elite who were admitted (Boyer, 1983).

In 1821, the Boston High School opened its doors as a model of what many consider to be the comprehensive high

school of today. In contrast to earlier versions of the secondary school, which served only to prepare students for college, this school was designed for both college bound and non-college bound students (Fraley, 1981). However, this school offered little in the way of innovations to the curriculum. Teachers continued to teach the core subjects of reading, writing, and arithmetic. Although upper level courses began to emerge with the addition of algebra to the core studies.

Thus the American common school idea was conceived, providing for publicly controlled schools that would be accessible on a free and equal basis to all (Fraley, 1981). But despite equal access, attendance continued to be by a select group (Boyer, 1983).

The common school experienced rapid growth during the late 1800's and into the 1900's. Populations began clustering in big cities, making attendance in the public schools more convenient. Additionally, with increasing technologic advancements, many school age children found themselves unemployable and thus had nothing better to do than attend school (Fraley, 1981).

In contrast to the six to seven percent of fourteen to seventeen year old children enrolled in secondary schools in 1890, nearly eleven percent were in attendance on a regular

basis by 1900. Compulsory attendance laws, passed during the 1900's also contributed to a rise in school populations as most states require attendance to at least the age of sixteen (Fraley, 1981). By 1960, over 85% of the secondary school age population was in attendance (Kilebard, 1987). Thus, this dramatic increase in enrollment, by a more representative citizen, has redefined the secondary school population (Sizer, 1965).

Despite a vastly different population, the curriculum and teaching methods have remained virtually unchanged. In 1892, the Committee of Ten, established for the purpose of assessing secondary schools, unanimously recommended that although schools were providing education for both college and non-college bound students, there should be no distinction in curriculum. Thus, all students were expected to learn the same curriculum, at the same rate without regard for individual differences (Kilebard, 1987). When analyzing the structure of today's American secondary schools, it becomes evident that this philosophy has prevailed over time.

Secondary schools today look amazingly similar to those of 1800. Students are required to take six to seven classes that are taught in forty to sixty minute periods each day. Students take courses in English, mathematics, science,

social studies, and choose from two or three electives (Kilebard, 1987).

Normally, students are computer assigned to classes. In some instances, however, they are assigned based on ability which is demonstrated through the common practice of tracking. Some high schools show little evidence of tracking, while others assign students to basic, average, enriched, and advanced placement classes (Sizer, 1986).

Once students are assigned to classes, academic subjects are taught in isolation by teachers trained in specific content areas. These content areas are departmentalized to the extent that teachers have little knowledge of what is taught next door or down the hall. Content area teachers have little contact with colleagues outside of their discipline. This isolation may not be in the best interest of students (Cox, 1980).

This structure of the American high school has been in place for so long that change is difficult. This is particularly true where one change requires a multitude of other changes to occur within the system.

Recent research suggests, however, that there are distinct, definite advantages to interdisciplinary teaming as a means of addressing the individual differences of a diverse population (Sizer, 1986; Sizer, 1988; Boyer, 1983;

Arhar, Johnston, & Markel, 1989). Through teaming, students may enjoy educational experiences not possible in the traditional classroom, whereby instruction focuses on mastery learning for multiaged groupings rather than on quantity (Erb, 1989).

Sizer (1988) contends that schools tend to be too large to meet the needs of most students. As students engage in the adjustment from middle school to high school, many fail one or more courses at the ninth grade level. Students who experience high rates of failure at this level have typically experienced previous difficulty in academic areas. These students often are those who are of average to above average intelligence who are simply not achieving their potential (Hamby, 1989). Unfortunately, when failure occurs, students tend to slip through the cracks of the educational system. Research has shown that students who do not graduate with their class are less likely to graduate at all (Hamby, 1989). A student who receives too few credits during his first year in high school, will be more likely to continue in the failure pattern and eventually become a dropout statistic (Hamby, 1989).

This type of at-risk student comes to high school with preconceived notions regarding his ability to achieve. The traditional, departmentalized strategies currently utilized

in American high schools are perhaps not sufficient in addressing the needs of these students. Therefore, there is a need for an alternative approach such as "schools-within schools" (Sizer, 1988).

By implementing this type of structure, students are placed in smaller groups where they are more apt to experience group cohesiveness and a sense of belonging. Additionally, teachers become responsible for a designated group of students, allowing for more open channels of communication between student and teacher (Sizer, 1986; Sizer, 1988; Goodlad, 1984).

Goodlad (1984) suggests that there are four basic elements to effective interdisciplinary teaming. Teachers must be engaged in teaching a common set of students during a common block of time in a common area with an opportunity for common team planning. This type of teaming structure allows for positive changes to take place within the school through enhanced communication. Additionally, as teachers become more involved in the decision making process, particularly in areas which directly affect their students, then curriculum can be transformed to better serve the needs of individual students (Goodlad, 1984).

Sizer (1988) suggests that teaming may be beneficial for targeting instruction to the at-risk population. With

students bringing more and more "baggage" with them to school, numerous problems are now facing American educators. School systems are now expected to address issues that were once dealt with in the home or through social services. Severe financial limitations, due to a slumping economy, have proved a deterrent to providing the type and quality of instruction that students deserve. Thus, there is often a lack of school staff, equipment, and time to carry on the necessary day to day activities of schooling children. These and numerous other factors set the student up for failure (Erb, 1989).

In addition to Goodlad's ideas, Boyer (1983) suggests enhanced support for the concept of interdisciplinary teaming. Boyer (1983) suggests that this approach will lead to greater cohesion of the curriculum. As teachers are free from bell schedules and the limitations dictated by the traditional classroom, they will be able to engage in flexible groupings of students. This practice may assist in reducing the use of tracking.

More recently, A Coalition of Essential Schools was established to test Theodore Sizer's ideas of interdisciplinary teaming at the high school level. Although teaming is common practice in the middle schools and, in effect, defines the middle school concept, few

empirical studies exist at the high school level. Studies that do exist are conflicting. Sizer (1984) reiterates the beliefs of Boyer and Goodlad in suggesting that there is a need for more integration of subject matter. The "school-within-a-school" provides for greater interaction between students and teachers with the required subject matter (Sizer, 1984).

Statement of the Problem

American public secondary schools are no longer serving merely an academically and intellectually elite college bound population. Yet, instructional practices continue to prevail much as they did nearly 200 years ago. These practices are no longer meeting the needs of a population much more representative of the American citizen. Thus, there must be an effort toward identifying and implementing strategies which will address the individual differences of both college and non-college bound students. The implementation of interdisciplinary teaming strategies at the ninth grade level may help to address some of these differences.

Purpose of the Study

The purpose of this study is to determine: whether group membership (teaming or control), positive parent contacts, negative parent contacts and gender have an effect on the academic achievement (as measured by core subject area grade point average), motivation (as measured by the School Attitudes Measure), attendance (as measured by the number of days in attendance during the school year), and suspension rate (as measured by the number of days spent suspended during the school year) of students identified as being at-risk of repeating the ninth grade. Specifically, this study addresses the following questions.

1. Will any of the predictor variables including group membership (teaming or control), positive parent contacts, negative parent contacts, and gender have an effect on the academic achievement of students identified to be at-risk of repeating the ninth grade?
2. Will any of the predictor variables including positive parent contacts, negative parent contacts, and gender have an effect on the motivation of students identified to be at-risk of repeating the ninth grade and participating in teaming?

3. Will any of the predictor variables including group membership (teaming or control), positive parent contacts, negative parent contacts, and gender have an effect on the attendance rate of students identified to be at-risk of repeating the ninth grade?

4. Will any of the predictor variables including group membership (teaming or control), positive parent contacts, negative parent contacts, and gender have an effect on the suspension rate of students identified to be at-risk of repeating the ninth grade?

Significance of the Study

This study may serve several educational purposes if, indeed, interdisciplinary teaming, positive parent contacts, negative parent contacts, and gender have an effect on the academic achievement, motivation, attendance, and suspension rate of students at-risk of repeating the ninth grade.

First, there is benefit to the program under study. Results may be used to expand the teaming concept to involve all at-risk students in interdisciplinary teaming. Secondly, students engaged in an alternative education program such as teaming may experience greater success in school, thereby staying in school, graduating with their class, and becoming

more productive members of society. Finally, this study may serve as a model for other schools that are experiencing frustration with the lack of effectiveness of traditional methods. Perhaps others will be spurred to engage in further research on interdisciplinary teaming and parental contacts at the high school level.

Definition of Terms

For the purpose of this study, the following definitions were used.

At-Risk -- students demonstrating difficulty in the core academic areas as indicated by a combination of D's and F's at the eighth grade level which increases their risk of repeating the ninth grade year (Hamby, 1989).

Interdisciplinary -- organization involving the four required academic areas of math, English, social studies, and science (Sizer, 1986; Boyer, 1983; Goodlad, 1984).

Ninth Grader -- student possessing 0-3 credits at the time of enrollment for the current school year (School Profile, 1991).

Project Coordinator -- member of the faculty, aside from team members, appointed to coordinate and monitor the interdisciplinary program (Annual School Plan, 1991).

Team Organization -- structure in which one teacher from each of the four academic areas are assigned a group of students, with opportunities for common planning, team teaching, and daily flexibility (Goodlad, 1984).

Assumptions

1. This study is based on the assumption that there is a need for alternative instructional strategies to better meet the needs of a diverse student population.
2. Teaming is appropriately and effectively operating within the sample school.

Limitations

The following limitations are important to note regarding this study.

1. Results of this study can be generalized to students receiving interdisciplinary teaming in this school taught by these teachers, probably over a period of years if the characteristics of the student body do not change.

Generalization to other schools, students, and teachers will have to be argued on a logical basis.

2. This study utilizes a small sample size due to financial constraints of the school.

3. Sample selection was constrained by the system used by the guidance department to select students for the teaming program.

CHAPTER 2

Review of the Literature

A review of the literature indicates that although the American secondary school remains rooted in tradition, periodic attempts have been made to engage innovative alternative strategies as a means of improving the instructional process. Although many such strategies have flourished for at least some duration, few have resulted in widespread changes at the high school level.

This literature review investigates the traditional separate subjects curriculum, early alternative interdisciplinary teaming designs, current trends in teaming, and research design flaws that have inhibited consensus regarding the effectiveness of teaming. Finally, this review assesses the need for further research in teaming in the high school.

Separate Subjects Curriculum

As discussed previously, the American secondary school was developed and implemented as a means of providing the intellectually and academically elite with the preparation necessary for admittance into the nation's colleges and universities (Faunce & Munshaw, 1965; Boyer, 1983; Sizer,

1986). However, as the school population became larger and more heterogeneous, instruction was, and remains today, dominated by the single subjects curriculum design (Boyer, 1983; Goodlad, 1984).

Critics of such designs maintain that there are five main pitfalls to this traditional method of instruction (Boyer, 1983; Arhar, Johnston, & Markel, 1988; Faunce & Munshaw, 1965). These criticisms may be summarized by the following statements.

1. There is no structured relationship between subjects. Therefore, students are forced to make their own connections (Faunce & Munshaw, 1965).
2. Class periods, as well as the school day are too segmented to permit time for activities, such as field trips, which enhance learning experiences (Sizer, 1986).
3. The number of students confronting the teacher during the school day makes it impossible for the development of teacher-student relationships (Boyer, 1983).
4. Subject area specialization results in emphasis being placed on the subject matter rather than upon the learner and the learning process (Faunce & Munshaw, 1965).
5. The material presented is typically in a form which may be easily conveyed to the learner by textbooks and

lecture, thus depersonalizing the instructional process (Boyer, 1983).

However, despite these seemingly serious defects, proponents claim definite advantages to this approach. They maintain that this type of structure is: 1) in harmony with tradition, 2) a logical prelude to the kind of curriculum that characterizes nearly all colleges and universities, and 3) desirable in that it lends itself to separate packaging of course materials such as textbooks and testing items (Boyer, 1983; Sizer, 1986). Such claims reveal an attitude oriented more toward teacher outcomes than those of students. Thus, it is easier on the teacher to maintain the status quo (Beggs, 1967; Cawelti, 1987).

Yet, despite such inherently weak claims by proponents, this single subject design continues to prevail in the secondary schools. Although critics present a strong case for moving away from the single subject curriculum, several factors already entrenched in the educational system act as barriers against any significant changes on a widespread basis (Cawelti, 1989; Beane, 1990; Clark & Clark, 1990; Willoughby, 1990).

Change is difficult as many special interest groups have a vested interest in the status quo. After all, when things are done according to tradition, life is easier and less threatening. Thus, threatening any widespread changes are factors such as teacher recertification requirements, accreditation of schools through the use of Carnegie units, and state and locally developed Standards of Learning and Curriculum Action Plans (Clark & Clark, 1990; Toepfer, 1990).

In order to move away from the single subjects design, teacher certification programs must be revised to reflect this trend away from specialization (Clark & Clark, 1990; Toepfer, 1990). Currently teachers become certified only in areas in which they have had college or university training, thus reflecting a major in some academic area (Stevens, 1991).

Likewise, accreditation procedures have become a driving force in dictating the structure of both the school day and the entire curriculum. The Carnegie unit, established as a standard unit to measure high school work, was based on time rather than student outcomes. A total of 120 hours per subject was required of students per subject for one unit of high school credit. This system, devised to standardize the high school transcript, has in many cases

become the school's main objective. Thus, departing from the traditional, despite potential benefits for students, may be viewed as an unwanted risk (Boyer, 1983; Clark & Clark, 1990).

Additionally, state and local curriculum plans provide stringent guidelines for course content. With the ever increasing social issues being forced into the school curriculum, teachers maintain they have little enough time to "cover" the required material without having to engage in some form of alternative instructional process (Willoughby, 1990).

Early Alternative Designs

Although numerous barriers have been encountered, a number of schools and school districts have attempted to restructure the instructional delivery process through the use of various teaming approaches. Some such methods have been short lived, while others flourished for considerable duration. Most, however, met their demise during the post-Sputnik era when emphasis returned to subject mastery (Fraley, 1965; Faunce & Munshaw, 1965).

Variations on teaming have been present in education since the early 1920's (Shaplin, 1964; Beggs, 1967; Boyer, 1983). Such variations included core, fused, broad-field,

unified studies, single subject, integration, and experience oriented methodology.

While each purported to be "teaming", characteristics of such programs were diverse (Boyer, 1983).

The core curriculum, as described by Hopkins (1937), Faunce & Munshaw (1965), and Boyer (1983), originated as a means of decentralizing guidance responsibilities in the school. Its central purpose was to promote development through problem solving. There was no real commitment to teach any particular subject. Rather, the course content was organized around problems encountered by students in every day living experiences. Thus, the curriculum, organized around the needs of students, served to develop the basic competencies needed by all citizens living in a democratic society. This methodology flourished in the 1930's and 1940's, but diminished at the high school level during the post-Sputnik era of the late 1950's (Shaplin, 1964; Beggs, 1967; Boyer, 1983).

Rather than focusing on the problems of students, the broad-fields curriculum addressed developmental issues of adolescents in pursuit of adult activities. Thus, the curriculum was designed to prepare students for adult life. Activities emphasized health, citizenship, language, social skills, spare time, mental fitness, religious, parental, and

unspecialized skills. It was thought that these were the activities that would dominate one's adult life (Hopkins, 1937; Faunce & Munshaw, 1965).

In the unified studies teams, two subject fields were combined into one course where the objectives of both courses were maintained through a planned correlation. This type of integration, also termed "fused", displayed itself primarily through courses in the humanities, often combining art and music or literature and history (Faunce & Munshaw, 1965).

In the early to middle 1970's, teaming emphasis shifted more toward experience based learning. Courses, thus, were organized around subjects, yet grew out of pupil interests (Cox, 1980). Although short lived, the experience based teaming approach helped to pave the way for what has become the foundation of the middle school concept (Goodlad, 1984).

Current Trends in Teaming

Although interdisciplinary teaming is the backbone of the middle school concept, it is rarely practiced at the high school level (Cox, 1980). The current trend toward teaming focuses on providing for the diverse needs of young adolescents generally during the middle school years (Stephens, 1990). In addressing these needs of students,

teaming also addresses many of the concerns critics have regarding the single subject curriculum design (Lounsbury, 1990).

Lounsbury (1990) lists six basic characteristics of the type of program which would best meet the needs of students. These characteristics are:

- 1) a block of time (rather than separate periods) scheduled for academic subjects, under the direction of an interdisciplinary team of teachers
- 2) an extensive program of enrichment, exploratory, and special-interest classes and activities
- 3) a developmental skills program that emphasizes reading and other communication and learning skills
- 4) a teacher-based guidance program that helps students develop positive attitudes, values, and self-esteem
- 5) a program that recognizes and accommodates the social needs of early adolescents
- 6) a positive school climate and school wide atmosphere of cooperation and caring (p. 57).

Based on these guideline, many teams have organized into what Sizer (1986) calls "schools-within-schools". This approach allows for smaller communities of students and teachers to be engaged in a more focused curriculum (Powell, 1985; Sizer, 1986). Although the focus is on educational

goals, it is the individuality of the student, not the curriculum that becomes the driving force (Wehlage, 1987).

Empirical Support

Although empirical studies date back to the early 1960's, there is no consensus as to the effectiveness of teaming strategies. Results of studies comparing team-taught classes and traditionally-taught classes are conflicting. Scholtz (1978) reviewed research on teaming in the United States and Europe. Conflicting results, he concluded, may be the result of poor experimental designs. The presence of non-matched experimental groups, non-random assignment, no control for the teacher, and questionable measurement techniques, are but a few of the variables confounding experimental designs (Scholtz, 1978). Of the 65 studies reviewed, Scholtz found that 36 studies reported no significant differences in academic achievement between teaming and traditionally taught groups. Nineteen studies reported significant differences in favor of teaming, while 11 reported significant differences for the traditionally-taught groups. Thus, when making conclusions regarding the effectiveness of instructional strategies, the adequacy of the research designs must be assessed (Scholtz, 1978).

Most of the studies conducted in the 1960's and 1970's revealed that teaming strategies were not particularly effective in producing significant growth in academic achievement. In a number of studies conducted, on teaming versus traditional instruction, between 1960 and 1966, no differences in academic achievement could be reported (Gamsky, 1960; Zimmerman, 1962; Oakland Public Schools, 1964; Georgiades & Bjelke, 1966).

Georgiades and Bjelke (1964) compared 38 team taught ninth graders with 38 traditionally-taught ninth graders. Subjects were matched with regard to sex, age, scores on the California Test of Mental Maturity, and scores on the Educational Testing Service Cooperative English Test. Georgiades & Bjelke (1964) found no significant differences between the two groups at the end of the year on the Cooperative English Test.

Taffel (1962) matched 55 pairs of physics students, assigned to team and traditionally-taught high school physics classes, on such variables as age, sex, grades, science and mathematics scores, intelligence scores, and scores on the Dunning Physics Test. Using gain scores on the Dunning Physics Test, and scores on the New York Regents Examination in Physics, and the Bronx High School of Science mid-year Physics Examination, Taffel (1962) concluded that

there were no significant differences in scores between the two groups.

Robinson (1968) studied the effects of team-taught classes versus traditionally-taught classes using 529 biology students and seventeen teachers in six high schools. Two hundred sixty-nine students were assigned to team-taught classes while 268 students were assigned to traditionally-taught classes. Although no significant differences were found between the two groups when assessed by locally developed unit tests, the Nelson Biology Test, and the New York Regents Examination in Biology, it is not clear as to whether teaching methods utilized in the team-taught classes were actually different than those employed in the traditionally-taught classes (Robinson, 1968).

Schlaadt (1969) studied the academic achievement of 114 students assigned to health classes. Three classes of fifty-seven students were traditionally-taught, while three classes of fifty-seven students were team-taught. Schlaadt used gain scores on the Shaw Health Knowledge Test to determine that there were no significant differences between the two groups.

In another study of single subject teaming, Fraenkel (1967) studied 137 eleventh grade students placed into team-taught and traditionally-taught classes. Sixty-three

students were assigned to the teaming arrangement, while the remaining seventy-four students were assigned to traditionally-taught classes. There was, however, no clear indication as to what basis was used to assign these students. A criterion measure, developed specifically for this study, was used to measure recall, recognition and reflection. While no significant differences were reported between the two groups on recall and recognition questions, students in the teaming arrangement scored significantly higher on the reflection portion of the test (Fraenkel, 1967).

A single subject teaming study, conducted by Lutenbacher (1970), compared ninth grade students in team-taught classes and traditionally-taught classes in the subjects of honors English, remedial English, and honors social studies. Like Schlaadt (1969), gain scores were computed, this time using the Stanford Achievement Test as pretest and posttest measures. No significant differences were reported between the two groups (Lutenbacher, 1970).

Gamsky (1970) conducted yet another single subject teaming study. He focused on the academic effects of teaming on a group of 145 ninth grade students enrolled in English and world history. Students were assigned in equal numbers to team and traditionally-taught classes, and were

assessed by teacher developed tests. Like previous single subject teaming studies, Gamsky (1970) concluded that no significant differences between the two groups had been found.

Only a few studies conducted during the 1960's and 1970's revealed significant differences between team and traditionally-taught groups. A second study by Georgiades and Bjelke (1966), reported higher academic achievement on reading scores of ninth grade students in team-taught versus traditionally-taught English classes. Again this study focused on a single subject matter.

Although early research denounced significant effects for teaming, studies conducted in the 1980's have provided some support for the teaming concept. Research tended to focus not so much on single subject teaming but rather on the effects of interdisciplinary teaming. Cotton (1982) found that interdisciplinary teaming was more effective, or at least equally effective, in producing academic growth.

Sinclair (1980) found significantly higher academic scores of eighth graders on the California Achievement Test when comparing team-taught and traditionally-taught classes. Likewise, in a review of 100 effective middle schools, 62% demonstrated consistent academic improvement (George &

Oldaker, 1985). Additionally, Lounsbury (1987) in a review of 55 studies, in which students were engaged in interdisciplinary programs, concluded that students acquire knowledge and skills as measured by conventional achievement tests, as well or better than those in separate subject programs.

Although these studies support teaming as an instructional strategy, several studies report mixed conclusions. For example, Bradley (1988) reported increased mathematics achievement, yet equal achievement in reading when comparing team-taught and traditionally-taught classes. Metz (1986) and Damico (1981) concluded that although no significant differences were found in achievement, teaming did demonstrate a positive effect on interracial relationships.

Summary of Empirical Evidence

Many of the studies, such as those by Taffel (1962), Georgiades and Bjelke (1964, 1966), Fraenkel, 1967), Robinson (1968), Gamsky (1970), and Lutenbacher (1970) employed teaming strategies in single subject classes such as biology, physics, health, social studies, or English. Few studies represent a truly interdisciplinary teaming approach to instruction (Lounsbury, 1987), and purely

interdisciplinary teaming research remains confined to the middle school (Sinclair, 1980; Cotton, 1982; George and Oldaker, 1985). In addition, the lack of consensus as to the effectiveness of teaming may be due to confounded experimental designs and variability found between and within teams (Scholtz, 1978). It is worth noting, at this point, that the definition of teaming and how this concept is employed is as varied as the number of studies conducted.

Effective Team Organization

Although empirical studies have focused on academic achievement, Sizer (1988) suggests that the benefits of teaming are not so narrowly limited. He suggests that not only do students benefit academically, but socially as well. Likewise, teachers and the school community as well reap the rewards of an effective teaming concept. The most effective teams are structured such that teachers and students are organized into small communities for teaching and learning (Sizer, 1988; Erb, 1989).

Through such organization, teaming thus becomes interdisciplinary rather than limited to single subjects. Sizer (1988) and Lounsbury (1990) suggest an organization in which three to five teachers have a common set of students,

a common block schedule, adjacent rooms, and a common planning period. This type of structure has been supported by Erb (1989), Brandt (1988), Cawelti (1987), Cuban (1989), and Wehlage (1987). Wehlage (1987) suggests the need for face to face relationships that can only occur in such small communities. In this manner, all students become known to at least one teacher (Tucker & Mandel, 1989). Teachers in these smaller communities, have the ability to personalize and individualize instruction to better meet the needs of individual students (Beggs, 1967).

As teachers are allowed more autonomy, the focus becomes the student rather than the curriculum. Admissions and dismissals become the control of teachers who schedule themselves and their students based on individual needs (Arhar, Johnston, & Markel, 1988; Beggs, 1967). As a result of the built in flexibility of block scheduling, teachers also decide how much time to allocate to various activities within the specified time block (Tucker & Mandel, 1989; Georgiades & Bjelke, 1964; and Beggs, 1967).

Effects for Students

By providing students with positive school experiences that negate discouragement and alienation, teams can influence student beliefs and attitudes (Gamsky, 1970).

They can change fundamental student-school interactions, stimulate cooperative relationships, and foster a positive student culture (Sizer, 1986; Sizer, 1988; Wehlage, 1987; Lounsbury, 1990). The family atmosphere allows students to improve social skills and attitudes and engages them in active and reflective behaviors (Gamsky, 1970; Sizer, 1986; Wehlage, 1987; Lounsbury, 1990). George and Oldaker (1985) suggest that students engaged in teaming also experience increased productivity. Perhaps more importantly, however, is the availability of counseling or peer calling groups, peer tutors, and adult and peer mentors which have been found to be useful interventions with at-risk students (Hamby, 1989).

Wehlage (1987) is a proponent of voluntary programs where students are admitted through an application process, whereby not all applicants are accepted. Thus, students are making a commitment to work, follow rules, meet expectations and conform to the set standards of behavior (Comer, 1987). Those who fail to commit are dropped from the program. Thus, selectivity is based on standards and excellence. Clear rules are set forth and it becomes the student's responsibility to rise to the occasion (Wehlage, 1987; Comer, 1987; Lounsbury, 1990; Brazee, 1991). For students, the classroom becomes a family atmosphere where they can

feel a sense of belonging as well as group cohesion (Sizer, 1988; Cuban, 1989; Clark & Clark, 1990).

Effects for Teachers

Like students, teachers participating in teaming develop an increased sense of belonging and camaraderie (George & Oldaker, 1985; Clark & Clark, 1990). They experience increased confidence, consistency, and morale. Teaming allows teachers the opportunity to develop a sense of community and shared commitments, thus lessening self-doubts. They become more able to promote discussions of students and the operational details of teaching with increased interdependence (George & Oldaker, 1985; Arhar, Johnston, & Markel, 1988). Teachers on teams tend to demonstrate higher expectations for their students and are able to handle disciplinary matters in a much more consistent manner. They can motivate students to achieve (Comer, 1987) and by improving instruction, may find teaching to be more rewarding (George & Oldaker, 1985).

Teachers within teams are unique individuals. They must believe in the opportunity for all children to learn, while dealing with problems that face students in their homes, communities, and peer groups (Arhar, Johnston, & Markel, 1988). Teachers who engage in joint decision making

(George & Oldaker, 1985), engage cooperation (Wehlage, 1987), and volunteer for such engagement (Beggs, 1964) often avoid the isolation of the single classroom and of teachers (Cuban, 1989).

Effects on Curriculum

Interdisciplinary teaming must be substantially different from the single subject area teaching (Wehlage, 1987). Individualization, clear objectives, feedback, and roles for students and teachers must be clearly defined (Wehlage, 1987). Instruction must leave the typical and search for inventiveness. Through direct instruction and active teaching, teachers may build on the strengths students bring to school (Cuban, 1989; Cawelti, 1989).

Thus, schools that engage in teaming situations tend to experience more enthusiasm from teachers and students (Metz, 1986). The more supportive and facilitative environment may lead to decreased tardiness and truancy (Sinclair, 1980; George & Oldaker, 1985; Hamby, 1989). Discipline may improve as well as the overall school climate. In addition, the faculty may express greater morale and enjoy greater parental involvement and support (George & Oldaker, 1985).

Need for Teaming Research

The discrepancies, found in the studies reported, suggest that additional study is needed in this field. Empirical studies, when adequately conducted, have typically been limited to single subject teaming at the high school level. Those studies that support interdisciplinary teaming have generally been confined to middle schools where interdisciplinary teaming is common place.

This study will attempt to fill that void by analyzing interdisciplinary teaming of the four core subject areas (math, science, English, and social studies) rather than assessing teaming within a single subjects design. The interdisciplinary structure of the program being assessed, follows the structure endorsed by Sizer (1988) and Lutenbaugh (1990).

CHAPTER 3

Method

The primary purpose of this study was to determine whether group membership (teaming or control), positive parent contacts, negative parent contacts, and gender have an effect on the academic achievement, motivation, attendance, and suspension rate of students identified as being at-risk of repeating the ninth grade.

Population and Sample

The school utilized in this study is a comprehensive high school, located in suburban Virginia, which serves a student population of approximately 1500. The total county population was estimated, in 1990, to be 230,000. Over the past ten years, the composition of the school population has changed significantly. During this time period, the minority population, representing such ethnic groups as blacks, hispanics, Asians, and American Indians, has increased from less than 10% to 23.8%. This represents the greatest increase in the county (County Profile, 1990).

The community served by this school is highly diversified with a wide range of income levels. During the 1991-92 school year, 7.8 percent of the student population qualified for free or reduced lunches. Employers are varied with nearly half of the residences within the school boundaries employed by the federal government. A large number of parents are employed by the military with many others employed in professional or managerial positions (County Profile, 1990).

Due to the large number of military families, this school serves a fairly transient population, estimated in 1991 at 10.1 percent. Although a 1985 survey revealed that between 60 and 70% of parents completed some form of higher education, recent boundary changes have resulted in a quite different student population. During the 1990-91 school year, approximately 150 students were lost due to boundary changes. Over the next three years, an additional 450 students (nearly one third of the school population) will be lost to neighboring schools. Current housing construction plans indicate that new housing projects within the existing school boundary lines will target lower income families (County Profile, 1990).

Oxley (1989) suggests that such large schools can create unfavorable learning situations. Therefore, by

subdividing students into schools-within-schools, an environment more conducive to learning may be created (Sizer, 1986; Oxley, 1989; Beane, 1990; Clark & Clark, 1990). Using Sizer's (1986) model of schools-within-schools, an alternative education program was developed to target incoming ninth graders identified to be at-risk of repeating the ninth grade. Such students were identified as being at-risk of repeating the ninth grade based upon their academic performance at the eighth grade level. These students received poor grades in the core subject areas, as measured by core subject area grade point averages and teacher observations.

Selection

Selection of students to participate in this alternative education program was accomplished through an application process. Students were referred by counselors, teachers, and parents based on their prior academic record.

Research (Hamby, 1989) indicates that grades tend to drop a letter grade or more when students make the transition from middle school to high school. Therefore, students chosen for the program were selected because they had poor grades (in the core subject areas) during the eighth grade year. The core subject grade point average was

compared to the IOWA Tests of Basic Skills composite score to identify students who demonstrated average to above average achievement on a standardized curriculum, yet received poor grades in the traditional content area classroom.

Due to logistical constraints including class size, classroom locations, and budget, the number of students accepted into the program was limited to sixty-two. These sixty-two students were selected from the nearly 400 incoming freshmen enrolled for the 1991-92 school year. Final selection was based on the following criteria.

1. Students selected for the alternative education program had a Total Composite score, on the IOWA Tests of Basic Skills (Riverside Publishing Company) which indicated a national stanine score between four and six. The IOWA Tests of Basic Skills (Riverside Publishing Company) is administered county wide at the eighth grade level. This measure was selected to identify students demonstrating average to above average achievement on a standard curriculum.
2. Final grades, from the eighth grade, were evaluated in the areas of math, science, and English. Students do not take social studies during this year. Students who received primarily D's, and F's were given priority.

3. The final grade point average was computed for the eighth grade year. Students earning a grade point average less than 2.0/4.0 were given primary consideration. Students with grade point averages higher than 2.0 were selected when the core subject area grade point average was primarily composed of D's and F's.
4. Counselors, teachers, and parents were consulted for recommendations regarding placement of the child in the program.

A control group, consisting of fifty students was generated by matching participants on the IOWA Tests of Basic Skills composite score, grade point average for the eighth grade year, grade point average for the three core academic subjects, and gender. These students demonstrated the same poor performance in the classroom at the eighth grade level as the treatment group, therefore putting them at risk of repeating the ninth grade. The following table displays the composition of both treatment and control groups with respect to the overall ninth grade population (see Table 1 and Table 2). Additionally, the composition of both treatment and control groups by gender and race is displayed in Table 3.

Table 1

Composition by Race - in percents

	TREATMENT	CONTROL	POPULATION
White	65.0	64.0	61.5
Am.Indian	1.5	1.0	.9
Black	29.0	29.0	25.0
Asian	3.0	2.5	5.8
Hispanic	1.5	3.5	6.6
TOTAL	100.0	100.0	100.0

Table 2

Composition by Gender - number of subjects

	TREATMENT	CONTROL	POPULATION
Males	42	42	237
Females	20	20	174

Table 3

Composition by Gender and Race - in number of subjects

	TREATMENT		CONTROL	
	Male	Female	Male	Female
White	20	10	18	11
Am. Indian	1	0	1	0
Black	10	6	8	8
Asian	2	0	1	0
Hispanic	1	0	0	2

Some selection bias is present as the participants in the alternative education program were accepted through an application process rather than by random assignment. Additionally, the control group was established through matching participants on IOWA Tests of Basic Skills composite scores, grade point average from the eighth grade, grade point average in the three core subject areas, and gender rather than by random assignment. Students in the control group, although many were recommended, were not selected for the program because they did not complete the application process.

Instrumentation

Academic achievement was measured using core subject area grade point averages (math, science, English, social studies). Grades in the academic subjects were averaged in the following manner. Teachers kept numerical grades in the grade book. Numerical averaging was used to determine the nine-week grade. In calculating the final nine-week average, the calculation was carried to one decimal place and rounded to the nearest whole number. The numerical average was converted to its letter equivalent for reporting purposed based on the following scale (see Table 4).

Table 4

Numerical Grading Scale

A	93-100	C	74-80
B+	90- 92	D+	71-73
B	84- 89	D	65-70
C+	81- 83	F	64 and below

As a general rule, teachers are required to have at least one numerical achievement grade per student each week in each subject area and eighteen separate assessments for a nine-week grading period.

Semester grades were computed using the following weighted scores.

1st nine weeks	37.5%
2nd nine weeks	37.5%
Semester exam	25.0%

The final yearly grade was derived by summing the grade point averages of the two semesters and converting that sum to the corresponding letter grade.

The cumulative grade point average was determined by applying the yearly letter grade to its numerical equivalent on the traditional four point scale. The numerical average of these figures was determined by computation for the four core subject areas.

The School Attitudes Measure (American Testronics), is a comprehensive assessment program that measures students' attitudes toward schooling. It is designed to measure several dimensions of attitude including motivation, self-concept, and instructional mastery. The subtest Motivation for Schooling was used to assess, for the treatment group, the effect of students' reactions to prior school experience

upon their motivation in school. Because these students have experienced failure in the middle school, it is necessary to enhance the child's confidence in his ability to improve and help him to understand that successes can be attributed to the child's learning (Butler-Por, 1987).

Scores on the level K/L form, include a weighted raw score, national percentile, local percentile, national stanine, local stanine, and normal curve equivalent for each student on each of the attitudinal scales. A total score is also reported. Items were reviewed, by test developers, for possible ethnic, gender, and socioeconomic bias.

Reliability has been determined for each scale as well as for the total composite score. The scale utilized in this study demonstrates a reliability of .84 squared or .70 for Student Motivation. This scale has demonstrated consistent high face and construct validity in that it adequately captures the theoretical construct or trait measured. The test claims to assess the affective domain rather than cognitive abilities.

This survey was normed simultaneously with the National Achievement Test and the Developing Cognitive Abilities Test in the fall of 1989 and spring of 1989. Nearly 150,000 students participated in the norming process. By determining both fall and spring norms, empirical growth data may be obtained from fall and spring results.

Variables

The primary independent variables in this study include a measurement for each student on each of the following items.

1. Group Membership - students are classified as members of treatment group (receiving teaming) or control group (following departmentalized schedule).
2. Gender - students are classified as male or female.
3. Composite subject area grade point average - pretest (computed for math, English, and science).
4. Positive Parent Contacts - number conducted during the school year.
5. Negative Parent Contacts - number conducted during the school year.
6. Motivation scores on School Attitudes Measure (American Testronics) - pretest.

The primary single dependent variables in this study include:

1. Composite subject area grade point averages - post (computed for math, English, science, and social studies)

2. Motivation scores on School Attitudes Measure (American Testronics) - post.

3. Attendance - recorded as number of days present during the 180 day school year.

4. Suspensions - number of in-school and out of school suspensions assigned during the school year.

In addition to these variables, the interaction of gender by treatment was observed. When interactions were not observed, the main effects of the variables were analyzed. A full discussion of the interaction analysis can be found in the data analysis section of this chapter.

Composite subject area grade point averages, for the four core academic areas, were used as measures of achievement as these are the subjects taught through the teaming process. Teaming situations diminish the validity of standardized instruments. Therefore a standardized test was not used as a measure of student achievement, as it does not measure the achievement of students on the curriculum that they are being taught. The team is more likely to develop unique and innovative materials deviating from the standard curriculum assessed by such standardized instruments.

Teacher grades, by means of grade point average, were evaluated to determine to what extent students met the standards of their respective teachers. There will be more variability on teacher grades. However, validity increases in that teacher grades reflect the degree to which students achieve on the curriculum that they are being taught. Constants for this study include the school and grade level.

Procedure

Planning for the implementation of this project began in the fall of 1989, when the idea for integrating math and science was conceived. Due to the reluctance of the math department to become involved in such a project, further project development was delayed until the fall of 1990. What started as a team to integrate mathematics and science evolved to include social studies and English.

During the 1990-91 school year, the four subject area team members, and an appointed coordinator, were given five days of released time for the purpose of designing the program and for developing and integrating curriculum. Work days were spaced such that necessary project related tasks could be completed prior to team meetings. Additional team meetings were held after school and during planning periods.

Two summer meetings were planned for the purpose of finalizing details of project implementation.

During the spring of 1991, the interdisciplinary team, with the cooperation of the guidance department, developed a pamphlet detailing the goals and objectives of the alternative education program. In March of 1991, this pamphlet was mailed to the parents of all eighth graders at the two feeder middle schools. Included in this mailing was an invitation to an informational meeting regarding the program.

This informational meeting, held in April 1991, provided parents an opportunity to ask questions regarding membership criteria, selection process, and curriculum concerns. Teachers participating on the team presented their examples as to how the teaming concept would be utilized in their academic disciplines. Community support was overwhelming with nearly thirty parents completing on-site applications.

Applications were accepted during the traditional scheduling process and throughout the summer. Applications exceeded the number of available spaces. Therefore, priority was given to students who most closely matched the selection criteria. The group, to receive interdisciplinary

instruction, consisted of the sixty-two students accepted by application. Parental permission could not be obtained in writing for five subjects, two subjects were withdrawn from school and placed in detention facilities due to behavior prior to the school year, and five subjects moved during the school year. Thus, only 50 students were used for the final analysis.

A control group, of fifty students, was generated through a matching process whereby members were selected based upon matches on the IOWA Tests of Basic Skills composite score, eighth grade grade point average, eighth grade core subject area grade point average, and gender. Students in the control group were randomly assigned, through a computer scheduling program, to courses and teachers.

Students, assigned to the alternative education program, participate in a block scheduling of classes where the four academic subjects of English, math, social studies, and science are taken during the first four periods in the morning. Although sixteen students are assigned to a single teacher each period for scheduling purposes, the team retains the flexibility and autonomy to determine how the time block will be utilized.

The sixteen students assigned to each teacher during the first period, comprise that teacher's advisory group. Teachers are responsible for weekly communication with the parents of those students. Initially, communication takes place through phone contacts documented in teacher logs. As the need for such frequent communication diminishes, correspondence takes place through written notes on duplicated forms. Teachers maintain a file of written and phone correspondence. Written correspondence is sent home via the student until a situation arises whereby parents are not receiving the information. At that point, the method of correspondence is determined on a case by case basis.

The four period time block enables teachers to utilize a variety of instructional strategies to enhance and evaluate student learning. Students may spend two periods engaged in a science laboratory investigation, or they may spend three periods viewing a classic film. The block scheduling allows for morning field trips, without the disruption of other classes or the cost incurred in hiring substitutes.

Team members meet at least twice weekly, during a common planning period, to discuss student concerns, instructional goals, and curriculum integration. Meetings are held more often as deemed necessary by the team.

Typically team meetings are held on each Wednesday and Friday. During the Friday meetings, the program coordinator also meets with the team to address any logistical or administrative concerns. The program coordinator is appointed to this position by the Principal and acts as a liaison between the team and the administration and faculty. This is not a paid position, but responsibilities are carried out in lieu of an assigned duty period.

Parental involvement is viewed by team members as an essential part of the educational process (Butler-Por, 1987). In addition to weekly communication, parent meetings are held approximately every six weeks. Each meeting has a theme but also allows for interaction between teachers and parents. Parent meetings are held in the evenings to facilitate attendance. The parent meetings are based on the following themes:

October - Get Acquainted, Sharing Concerns

November - Homework Tips, Discussion of Nine Week Grades

December - Holiday Social, hosted by students

February - Interpretation of DAT Scores, Tour of Career
Center

May - Evaluation of the Program

Attendance at parental meetings is not mandatory but strongly encouraged. Team teachers, as well as the team

coordinator, identified the themes and developed meeting agendas.

Frequent field trips, for members of the alternative program, allow students the opportunity to have educational experiences that may not otherwise be available. For example, students participated in team building activities at Hemlock Overlook Park, a program run by George Mason University. A trip to the planetarium allowed students the opportunity to have direct instruction in viewing the night sky. A trip to a Washington Bullets basketball game fostered camaraderie among students, staff, and parents.

Teacher advisory-type activities are built into the program but not on a scheduled basis. Teachers mutually agree upon activities and times for implementation. Many activities revolve around self-esteem building concepts.

Students assigned to the control group follow the traditional high school schedule, taking seven, forty-five minute classes in random sequence. Having classes with other members of the control group occurs merely by chance generated by the fact that there are courses required of all ninth graders.

Correspondence with parents occurs at the discretion of the individual teacher. However, typical communication occurs only when a student is in serious academic trouble or

when a behavior problem arises. Generally speaking, teachers have little time for the much needed and deserved positive feedback. Field trips are nearly nonexistent in the traditional classroom, particularly with recent budget constraints. Parent meetings and advisory programs are also unavailable to the students engaged in the typical departmentalized setting.

Data Collection

Prior to implementation of this project, some data was collected on the independent variables including final grade point averages from the eighth grade, eighth grade academic letter grades for the year in each of the core subjects, and IOWA Tests of Basic Skills (Riverside Publishing Company) composite scores. These data were used to determine the eligibility of applicants.

In September, 1991, the School Attitudes Measure (American Testronics) was administered as a pretest to all students composing the treatment group. Scoring of this assessment was completed and reported by American Testronics. The same School Attitudes Measure (American Testronics) was administered, as a posttest, to all students composing the treatment group during May, 1992.

In addition to the above sources of data, the following information, for all subjects, was collected during this study:

1. student gender
2. a record of student attendance (measured by the number of days the student is in attendance during the school year as reported by the data office)
3. a record of positive parent contacts (measured by the number of positive parent contacts made by teachers and counselors as documented through teacher and counselor logs)
4. a record of negative parent contacts (measured by the number of negative parent contacts made by teachers and counselors as documented through teacher and counselor logs)
5. a record of student suspensions (measured by the number of days spent in in-school and out of school suspension as reported by the quarterly suspension reports)
6. other observations and historical data occurring during this study.

At the completion of this project, transcripts were obtained containing the final grades and grade point averages, as calculated by computer.

Data Analysis

In order to utilize teaming techniques to better meet the needs of students at-risk of repeating the ninth grade, the following hypotheses were tested. Multiple regression techniques were utilized to determine if the predictors account for a significant portion of the variance in the identified dependent variables. This method was selected due to the continuous nature of the variables. Variables which were represented by categorical data, such as gender, were entered by utilizing a dummy variable coding system.

Question 1. The primary research question seeks to determine whether any of the predictor variables including group membership (teaming or control), positive parent contacts, negative parent contacts, and gender have an effect on academic achievement (as defined by the grade point average in the four core subject areas of math, science, social studies, and English) of students identified to be at-risk of repeating the ninth grade.

The overall model is:

$$Y' (\text{achievement}) = a + b_1(\text{pre-achievement}) + b_2(\text{group membership}) + b_3(\text{positive parent contacts}) + b_4(\text{negative parent contacts}) + b_5(\text{gender})$$

The alternative hypothesis, for the group membership effect, is: There will be an effect on academic achievement (as measured by core subject area grade point average), for students in this study, based on group membership when partialling out the variance attributed to all of the other variables in the model, including pre-achievement as a covariate.

The alternative hypothesis, for the positive parent contact effect, is: There will be an effect on academic achievement (as measured by core subject area grade point average), for students in this study, based on positive parent contacts when partialling out the variance attributed to all of the other variables in the model, including pre-achievement as a covariate.

The alternative hypothesis, for the negative parent contact effect, is: There will be an effect on academic achievement (as measured by core subject area grade point average), for students in this study, based on negative parent contacts when partialling out the variance attributed to all of the other variables in the model, including pre-achievement as a covariate.

The alternative hypothesis, for the gender effect, is: There will be an effect on academic achievement (as measured by core subject area grade point average), for students in

this study, based on gender when partialling out the variance attributed to all of the other variables in the model, including pre-achievement as a covariate.

Question 2: Will any of the predictor variables including positive parent contacts, negative parent contacts, and gender have an effect on the motivation of students identified to be at-risk of repeating the ninth grade and participating in teaming?

The overall model is:

$$Y' (\text{motivation}) = a + b_1(\text{premotivation}) + \\ b_2(\text{positive parent contacts}) + \\ b_3(\text{negative parent contacts}) + b_4(\text{gender})$$

The alternative hypothesis, for the positive parent contact effect, is: There will be an effect on motivation (as measured by the School Attitudes Measure) based on positive parent contacts when partialling out the variance in motivation attributed to all of the other variables in the model, including pre-motivation as a covariate.

The alternative hypothesis, for the negative parent contact effect, is: There will be an effect on motivation (as measured by the School Attitudes Measure) based on negative parent contacts when partialling out the variance

in motivation attributed to all of the other variables in the model, including pre-motivation as a covariate.

The alternative hypothesis, for the gender effect, is: There will be an effect on motivation (as measured by the School Attitudes Measure) based on gender when partialling out the variance in motivation attributed to all of the other variables in the model, including pre-motivation as a covariate.

Question 3: Will any of the predictor variables including group membership (teaming or control), positive parent contacts, negative parent contacts, and gender have an effect on attendance (as measured by the number of days students are in attendance during the school year) of students identified as being at-risk of repeating the ninth grade?

The overall model is:

$$Y'(\text{attendance}) = a + b_1(\text{group membership}) + b_2(\text{positive parent contacts}) + b_3(\text{negative parent contacts}) + b_4(\text{gender})$$

The alternative hypothesis, for the group membership effect, is: There will be an effect on attendance (as measured by the number of days students are in attendance during the school year), for students in this study, based

on group membership when partialling out the variance attributed to all of the other variables in the model.

The alternative hypothesis, for the positive parent contact effect, is: There will be an effect on attendance (as measured by the number of days students are in attendance during the school year), for students in this study, based on positive parent contacts when partialling out the variance attributed to all of the other variables in the model.

The alternative hypothesis, for the negative parent contact effect, is: There will be an effect on attendance (as measured by the number of days students are in attendance during the school year), for students in this study, based on negative parent contacts when partialling out the variance attributed to all of the other variables in the model.

The alternative hypothesis, for the gender effect, is: There will be an effect on attendance (as measured by the number of days students are in attendance during the school year), for students in this study, based on gender when partialling out the variance attributed to all of the other variables in the model.

Question 4. Will any of the predictor variables including group membership (teaming or control), positive parent contacts, negative parent contacts, and gender have an effect on the suspension rate (as measured by the number of days a student is suspended from school) of students identified to be at-risk of repeating the ninth grade?

The overall model is:

$$Y'(\text{suspend}) = a + b_1(\text{group membership}) + b_2(\text{positive parent contacts}) + b_3(\text{negative parent contact}) + b_4(\text{gender})$$

The alternative hypothesis, for the group membership effect, is: There will be an effect on suspension rate, for students in this study, based on group membership when partialling out the variance attributed to all of the other variables in the model.

The alternative hypothesis, for the positive parent contacts effect, is: There will be an effect on suspension rate, for students in this study, based on positive parent contacts when partialling out the variance attributed to all of the other variables in the model.

The alternative hypothesis, for the negative parent contacts effect, is: There will be an effect on suspension rate, for students in this study, based on negative parent

contacts when partialling out the variance attributed to all of the other variables in the model.

The alternative hypothesis, for the gender effect, is: There will be an effect on suspension rate, for students in this study, based on gender when partialling out the variance attributed to all of the other variables in the model.

Interactions

In addition to the stated research questions, interactions between selected variables were also analyzed.

Two variables are said to interact in their accounting for variance in the dependent variable when over and above any additive combination of their separate effects, they have a joint effect (Cohen & Cohen, 1983). In the analysis of interactions there are three questions of interest.

- 1) Are the slopes equal or parallel? If the b's are equal then there is no interaction and one can therefore ask:
- 2) Are the intercepts equal? If the a's are equal, then one line fits the data and therefore there are no group differences.

- 3) Are the lines constant? If the common $b=0$, then there is no effect for the variables.

Interactions between two Dichotomous Variables

The interaction of interest, with each of the dependent variables, attempts to explain an interaction between two dichotomous variables: group membership (teaming or control) and gender (male or female). This interaction was analyzed, for each research question, through a 2 X 2 factorial design as depicted in Table 5.

Table 5

2 X 2 Factorial Design

A1 (Teaming)		A2 (Control)	
B1 (male)	B2 (female)	B1 (male)	B2 (female)

Three independent variables A, B, and AB, represent the two factors (group membership and gender) and their interaction. The first main effect, teaming versus control, demonstrates the contrast between the mean of the means of the (A=) 2 treatment groups (G1 and G2) and the mean of the means of the (B=) 2 control groups. The second main effect, male versus female, is a combination of G1 and G3 and G2 and G4. By contrast coding the two main effects, the interaction contrast may be obtained by computing for each group the product of its X1 and X2 codes. Thus the following coding was applied to represent the main effects and their resulting interaction (see Table 6).

Table 6

Contrast Coding for 2 X 2 Factorial Design

Experimental Group	A	B	AB
Teamed males	1/2	1/2	1/4
Teamed females	1/2	-1/2	-1/4
Control males	-1/2	1/2	-1/4
Control females	-1/2	-1/2	1/4

The interaction between A and B can now be represented by the multiplication of their respective independent variables and subsequently linearly partialling out the A and B from the product set. A stepwise regression analysis of the variables A, B, AB, will correctly represent both the main-effects and the resulting interactions (Cohen & Cohen, 1983). The alternative hypothesis for each of the dependent variables is: There will be an effect on the dependent variable due to the interaction between group membership and gender.

Results, of the hypotheses testing, will be reported in Chapter 4 with the complete discussion of the significance of those findings included in Chapter 5.

Chapter IV

Results

This chapter provides the results of the research methods described in Chapter III. Statistical results are presented as they apply to each of the identified research questions. Computational procedures, for this study, including descriptive statistics, analysis of covariance, and multiple regression analysis were completed using the SPSS statistical package. The results of this study and their impacts are discussed in Chapter V.

A quasi-experimental Pretest - Posttest research design was used to determine whether group membership (teaming or control), positive and negative parent contacts, and gender would have an effect on the academic achievement (as measured by the core subject area grade point average), motivation (as measured by the School Attitudes Measure), attendance, and suspension rate of students identified to be at-risk of repeating the ninth grade. Participants in this study were 100 students identified to be at-risk of repeating the ninth grade on the basis of having primarily D's, and F's in the three core subject areas of math, science, and English at the completion of the eighth grade year. Participants in the treatment group, receiving

teaming, were 50 students selected through an application process and recommended by teachers, counselors, and parents. A control group, composed of 50 students, was identified by matching students on the IOWA Tests of Basis Skills composite score, eighth grade composite grade point average, eighth grade core subject area grade point average (math, science, and English) and gender.

Students composing the treatment group received interdisciplinary teaming for the duration of the ninth grade year. Concepts of teaming, as proposed by Sizer (1989) and Arhar and Johnston (1986) were employed with emphasis on team building activities. Students composing the control group followed a traditional departmentalized schedule.

Descriptive statistics provided group means and standard deviations (see Table 7). This information provided the location, spread, and distribution for each variable. Correlations provided an indication of the predictability of one variable given another variable (see Table 8).

Table 7

Variable Means and Standard Deviations

Variable	Treatment Mean	Standard Deviation	Control Mean	Standard Deviation
Attend (Attendance)	155.78	23.58	168.00	10.85
Core8 (8th core GPA)	1.69	.61	1.69	.61
Core9 (9th core GPA)	1.74	.93	1.01	.58
Gender	1.32	.47	1.32	.47
Negpar (- contacts)	9.98	6.25	0.00	0.00
Pospar (+ contacts)	10.60	6.53	0.00	0.00
Presam (pre-motive)	464.42	104.18	0.00	0.00
Posam (post-motive)	439.57	121.72	0.00	0.00
Susp (suspensions)	2.58	3.97	1.90	3.22

Table 8

Variable Correlations

VARIABLE	CORE8	POSPAR	NEGPARG	ATTEND	SUSP
CORE8	1.00	.03	-.06	.18	-.09
POSPAR		1.00	.24*	.08	-.19
NEGPARG			1.00	-.53**	.36**
ATTEND				1.00	.58**
SUSP					1.00

VARIABLE	PRESAM	POSAM	GENDER	CORE9	GROUP
CORE8	.28	.31*	.40**	.36**	.02
POSPAR	.06	.05	.03	.75**	.76**
NEGPARG	-.00	.01	.02	.01	.76**
ATTEND	.21	.35*	-.03	.40**	-.32**
SUSP	-.02	-.15	-.08	-.40**	.09
PRESAM	1.00	.63	.03	.44**	.
POSAM		1.00	.05	.58**	.
GENDER			1.00	.18	.00
CORE9				1.00	.43**
GROUP					1.00

* significant at .05

** significant at .01

. coefficient could not be calculated

Hypothesis Testing

In order to utilize teaming techniques to better meet the needs of students identified to be at-risk of repeating the ninth grade, the following questions were analyzed.

Question 1. The primary research question seeks to determine whether any of the predictor variables including group membership (teaming or control), positive parent contacts, negative parent contacts, and gender have an effect on academic achievement (as defined by the grade point average in the four core subject areas of math, science, social studies, and English) of students identified to be at-risk of repeating the ninth grade. Means by group for the pretest and posttest were useful in identifying differences in academic performance (see Table 9).

Table 9

Means by Group for Pretest and Posttest Achievement
Utilizing Analysis of Covariance

Group	Academic Achievement	
	Core8	Core9
Control	1.69	1.01
Treatment	1.69	1.78

The mean post- core subject area grade point average for the treatment group (1.77) was found to be higher than the mean post-core subject area grade point average for the control group (1.01).

Multiple regression techniques were utilized to identify the amount of variance accounted for by each of the variables when partialling out the variance attributed to all of the other variables in the model and to identify variables that would be useful in a model to predict achievement. The overall model including group membership (teaming or control), gender, positive parent contacts and negative parent contacts, with pre-achievement as a covariate, was found to be significant ($p = .0000$) in explaining 66% of the adjusted variance in academic achievement (see Table 10).

Table 10

Multiple Regression Report for Achievement

(Post Core Subject Area Grade Point Average)

Step	R square	R Square Change	F change	p-value
CORE8				
GROUP				
POSPAR				
NEGPAP				
GENDER	.66	.66	35.70	.00

Analysis of Variance

Source	SS	DF	MS	F-ratio	p
Regression	46.23	5	9.25	35.70	.000
Residual	24.08	93	.26		

Effect of Group Membership on Academic Achievement

The null hypothesis, for the group membership effect, was: There will be no effect on academic achievement, for students in this study, based on group membership. The alternative hypothesis was: There will be an effect on academic achievement, for students in this study, based on group membership.

The variables, including positive parent contacts, negative parent contacts, and gender with pre-achievement as a covariate, were entered as a set into the multiple regression analysis, so as to partial out any variance attributed to these variables.

With the variance attributed to these variables partialled out, group membership (whether teaming or control) accounted for a nonsignificant ($p=.14$) 1% of the adjusted variance in academic achievement (see Table 11). Therefore, the results of this analysis fail to reject the null hypothesis. There was no effect on academic achievement, for students in this study, based on group membership.

Table 11

Multiple Regression Report for Group Membership Effect on Academic Achievement

Step	R Square	R Square Change	F change	p-value
Core8				
Gender				
Pospar				
Negpar	.65	.65	43.50	.00
Group	.66	.01	2.24	.14

Source	B	S E	B	Beta	t	p-value
Core8	.29	.04		.21	3.13	.00
Gender	.11	.12		.06	.93	.36
Pospar	.11	.02		.95	6.40	.00
Negpar	.01	.02		.05	.33	.74
Group	-.27	.18		-.32	-1.50	.14
Constant	.08	.22			.95	.35

Effect of Positive Parent Contacts on Achievement

The null hypothesis, for the effect of positive parent contacts on academic achievement, was: There will be no effect on academic achievement, for students in this study, based on positive parent contacts. The alternative hypothesis was: There will be an effect on academic achievement, for students in this study, based on positive parent contacts. The variables, including group membership, negative parent contacts, and gender with pre-achievement as a covariate, were entered as a set into the multiple regression analysis, so as to partial out any variance attributed to these variables. With the variance in academic achievement attributed to these variables partialled out, positive parent contacts accounted for an additional, yet significant ($p=.000$) 15% of the adjusted variance in academic achievement (see Table 12). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted as stated. There was an effect on academic achievement, for students in this study, based on positive parent contacts.

Table 12

Multiple Regression Report for Positive Parent Contacts
Effect on Academic Achievement

Step	R square	R Square Change	F change	p-value
Group				
Gender				
Core8				
Negpar	.51	.51	24.14	.00
Pospar	.66	.15	40.94	.00

Source	B	S E	B	Beta	t	p-value
Group	-.27	.18		-.32	1.50	.14
Gender	.11	.12		.06	.93	.36
Core8	.29	.09		.21	3.13	.00
Negpar	.01	.02		.04	.33	.74
Pospar	.11	.02		.95	6.40	.00
Constant	.21	.22			.95	.35

Effect of Negative Parent Contacts on Academic Achievement

The null hypothesis, for negative parent contacts effect, was: There will be no effect on academic achievement, for students in this study, based on negative parent contacts. The alternative hypothesis was: There will be an effect on academic achievement, for students in this study, based on negative parent contacts.

The variables, including group membership, positive parent contacts, and gender, with pre-achievement as a covariate, were entered as a set into the multiple regression analysis, so as to partial out any variance attributed to these variables. Once the variance attributed to these variables was partialled out, negative parent contacts accounted for a nonsignificant ($p=.74$) less than 1% of the adjusted variance in academic achievement (see Table 13). Therefore, the results of this analysis fail to reject the null hypothesis. There was no effect on academic achievement, for students in this study, based on negative parent contacts.

Table 13

Multiple Regression Report for Negative Parent Contacts
Effect on Academic Achievement

Step	R square	R Square Change	F change	p-value
Group				
Gender				
Core8				
Pospar	.66	.66	45.03	.00
Negpar	.66	.00	.11	.74

Source	B	S E	B	Beta	t	p-value
Group	-.27	.18		-.32	1.50	.14
Gender	.11	.12		.06	.93	.36
Core8	.29	.09		.21	3.13	.00
Negpar	.01	.02		.04	6.40	.74
Pospar	.11	.02		.95	6.40	.00
Constant	.21	.22			.95	.35

Effect of Gender on Academic Achievement

The null hypothesis, for the effect of gender on academic achievement, was: There will be no effect on academic achievement, for students in this study, based on gender. The alternative hypothesis was: There will be an effect on academic achievement, for students in this study, based on gender.

The variables including group membership, positive parent contacts, negative parent contacts, with pre-achievement as a covariate were entered as a set into the multiple regression analysis, so as to partial out any variance in academic achievement attributed to these variables.

With these variables partialled out, gender accounted for a nonsignificant ($p=.36$) less than 1% of the adjusted variance in academic achievement (see Table 14). Therefore, the results of this analysis fail to reject the null hypothesis. There was no effect on academic achievement, for students in this study, based on gender.

Table 14

Multiple Regression Report for Gender Effect on Academic
Achievement

Step	R Square	R Square Change	F Change	p-value
Group				
Core8				
Pospar				
Negpar	.65	.65	44.48	.00
Gender	.66	.00	.98	.36

Source	B	S E	B	Beta	t	p-value
Group	-.27	.18		-.32	-1.50	.14
Core8	.29	.09		.21	3.13	.00
Pospar	.01	.01		.05	.33	.74
Negpar	.11	.02		.95	6.40	.00
Gender	.11	.12		.06	.93	.36
Constant	.21	.22			.95	.35

There was no interaction effect, between group membership and gender, on academic achievement (see Table 15). Further, no main effects were found for group membership ($p=.12$) or gender ($p=.36$) on academic achievement (see Table 15). Therefore, the results of this analysis fail to reject the null hypothesis. There was no effect on academic achievement based on an interaction between group membership and gender.

Table 15

Multiple Regression Report for Interaction Effect of Group
Membership and Gender on Academic Achievement

Step	R Square	R Square Change	F Change	p-value
Core8				
Negpar				
Pospar	.65	.65	57.65	.00
A(Group)	.65	.01	2.41	.12
B(Gender)	.66	.00	.86	.36
AB(Inter)	.67	.01	2.92	.09

Source	B	S E	B	Beta	t	p-value
Core8	.30	.09	.21	.21	3.20	.00
Negpar	.00	.02	.02	.02	.15	.88
Pospar	.11	.02	.93	.93	6.25	.00
A(Group)	-.11	.12	-.06	-.06	-.95	.35
B(Gender)	-.41	.37	-.24	-.24	-1.12	.26
AB(Inter)	-.37	.22	-.11	-.11	-1.71	.09
Constant	.29	.24			1.24	.22

Question 2. Will any of the predictor variables including positive parent contacts, negative parent contacts, and gender have an effect on the motivation of students identified to be at-risk of repeating the ninth grade, who participate in teaming?

Means for the pretest and posttest were useful in identifying differences in motivation (see Table 16).

Table 16

Means for Pretest and Posttest Motivation Scores Utilizing
Analysis of Covariance

Group	Motivation	
	PRESAM	POSAM
Treatment	464.42	439.57

Mean pre-motivation (464.42), for the treatment group, was found to be higher than mean post-motivation (439.57).

Multiple regression analysis techniques were utilized to identify the amount of variance accounted for by each of the variables when partialling out the variance attributed to all other variables in the model and to identify variables that would be useful in a model to predict motivation. The overall model including positive parent contacts, negative parent contacts, and gender, with pre-motivation as a covariate, was found to be significant ($p=.000$) in explaining 40% of the adjusted variance in motivation (see Table 17).

Table 17

Multiple Regression Report for Motivation

Step	R Square	R Square Change	F Change	p-value
PRESAM				
POSPAR				
NEGP				
GENDER	.40	.40	6.57	.00

Analysis of Variance

Source	SS	DF	MS	F-ratio	p
Regression	256672.0	4	64168.0	6.57	.0004
Residual	380446.7	39	9755.0		

Effect of Positive Parent Contacts on Motivation

The null hypothesis, for the effect of positive parent contacts on motivation, was: There will be no effect on motivation, for students in this study, based on positive parent contacts. The alternative hypothesis was: There will be an effect on motivation, for students in this study, based on positive parent contacts.

The variables, including negative parent contacts, and gender with pre-motivation as a covariate, were entered as a set into the multiple regression analysis, so as to partial out any variance in motivation attributed to these variables. With the variance attributed to these variables partialled out, positive parent contacts accounted for a nonsignificant ($p=.76$) less than 1% of the adjusted variance in motivation (see Table 18). Therefore, the results of this analysis fail to reject the null hypothesis. There was no effect on motivation, for students in this study, based on positive parent contacts.

Table 18

Multiple Regression Report for Positive Parent Contacts
Effect on Motivation

Step	R Square	R Square Change	F Change	p-value
Gender				
Negpar				
Presam	.40	.40	8.94	.00
Pospar	.40	.00	.09	.76

Source	B	S E B	beta	t	p-value
Gender	2.96	31.83	.01	.09	.93
Negpar	.83	3.90	.04	.21	.83
Presam	.71	.14	.63	5.03	.00
Pospar	1.23	4.03	.06	.30	.76
Constant	83.96	101.27		.83	.41

Effect of Negative Parent Contacts on Motivation

The null hypothesis, for negative parent contacts effect, was: There will be no effect on motivation, for students in this study, based on negative parent contacts. The alternative hypothesis was: There will be an effect on motivation, for students in this study, based on negative parent contacts.

The variables, including positive parent contacts, and gender, with pre-motivation as a covariate, were entered as a set into the multiple regression analysis, so as to partial out any variance in motivation attributed to these variables. Once the variance attributed to these variables was partialled out, negative parent contacts accounted for a nonsignificant ($p=.83$) less than 1% of the adjusted variance in motivation (see Table 19). Therefore, the results of this analysis fail to reject the null hypothesis. There was no effect on motivation, for students in this study, based on negative parent contacts.

Table 19

Multiple Regression Report for Negative Parent ContactsEffect on Motivation

Step	R Square	R Square Change	F Change	p-value	
Group					
Gender					
Pospar					
Presam	.40	.40	8.97	.00	
Negpar	.40	.00	.04	.83	

Source	B	S E B	Beta	t	p-value

Gender	2.96	31.83	.01	.09	.93
Pospar	1.23	4.03	.06	.30	.76
Presam	.71	.14	.63	5.03	.00
Negpar	.83	3.90	.04	.21	.83
Constant	83.96	101.27		.83	.41

Effect of Gender on Motivation

The null hypothesis, for the effect of gender on motivation, was: There will be no effect on motivation, for students in this study, based on gender. The alternative hypothesis was: There will be an effect on motivation, for students in this study, based on gender. The variables including positive parent contacts, negative parent contacts, with pre-motivation as a covariate were entered as a set into the multiple regression analysis, so as to partial out any variance in motivation attributed to these variables.

With these variables partialled out, gender accounted for a nonsignificant ($p=.93$) less than 1% of the adjusted variance in motivation (see Table 20). Therefore, the results of this analysis fail to reject the null hypothesis. There was no effect on motivation, for students in this study, based on gender.

Table 20

Multiple Regression Report for Gender Effect on Motivation

Step	R Square	R Square Change	F Change	p-value		
Group						
Negpar						
Pospar						
Presam	.40	.40	8.99	.00		
Gender	.40	.00	.01	.93		

Source	B	S E	B	Beta	t	p-value

Negpar	.83	3.90	.04	.21	.83	
Pospar	1.23	4.03	.06	.30	.76	
Presam	.71	.14	.63	5.03	.00	
Gender	2.96	31.83	.01	.09	.93	
Constant	83.96	101.27		.83	.41	

Question 3. Will any of the predictor variables including group membership (whether teaming or control), positive parent contacts, negative parent contacts, and gender have an effect on the attendance of students identified to be at-risk of repeating the ninth grade? Means by group were useful in identifying differences in attendance (see Table 21).

Table 21

Group Means for Attendance Utilizing Analysis of Variance

Dependent Variable	Mean		p-value
	Control	Treatment	
ATTEND	168.00	155.78	.001

Mean attendance, for the treatment group, (155.78) was found to be slightly lower than the mean attendance (168.00) of the control group.

Multiple regression analysis techniques were utilized to identify the amount of variance accounted for by each of the variables when partialling out the variance attributed to all other variables in the model and to identify variables that would be useful in a model to predict attendance. The overall model including group membership (teaming or control), positive parent contacts, negative parent contacts, and gender, was found to be significant ($p=.000$) in explaining 35% of the adjusted variance in attendance (see Table 22).

Table 22

Multiple Regression Report for Attendance

Step	R Square	R Square Change	F Change	p-value
GROUP				
POSPAR				
NEGPARG				
GENDER	.35	.35	12.93	.00

Analysis of Variance

Source	SS	DF	MS	F-ratio	p
Regression	12956.26	4	3239.07	12.9347	.0000
Residual	23789.53	95	250.42		

Effect of Group Membership on Attendance

The null hypothesis, for the group membership effect, was: There will be no effect on attendance, for students in this study, based on group membership. The alternative hypothesis was: There will be an effect on attendance, for students in this study, based on group membership.

The variables, including positive parent contacts, negative parent contacts, and gender, were entered as a set into the multiple regression analysis, so as to partial out any variance in attendance attributed to these variables.

With the variance attributed to these variables partialled out, group membership (whether teaming or control) accounted for an additional ($p=.05$) 3% of the adjusted variance in attendance (see Table 23). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted as stated. There was a negative effect on attendance, for students in this study, based on group membership.

Table 23

Multiple Regression Report for Group Membership Effect on Attendance

Step	R Square	R Square Change	F Change	p-value
Gender				
Negpar				
Pospar	.32	.32	15.39	.00
Group	.35	.03	4.09	.05

Source	B	S E	B	Beta	t	p-value
Gender	-1.88	3.42		-.05	-.55	.58
Negpar	.65	.56		-.23	-1.15	.25
Pospar	1.58	.54		.58	2.93	.00
Group	-11.25	5.56		-.59	-2.02	.05
Constant	157.35	5.55			28.36	.00

Effect of Positive Parent Contacts on Attendance

The null hypothesis, for the effect of positive parent contacts on attendance, was: There will be no effect on attendance, for students in this study, based on positive parent contacts. The alternative hypothesis was: There will be an effect on attendance, for students in this study, based on positive parent contacts.

The variables, including group membership, negative parent contacts, and gender, were entered as a set into the multiple regression analysis, so as to partial out any variance in attendance attributed to these variables. With the variance in attendance attributed to these variables partialled out, positive parent contacts accounted for an additional ($p=.00$) 6% of the adjusted variance in attendance (see Table 24). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted as stated. There was an effect on attendance, for students in this study, based on positive parent contacts.

Table 24

Multiple Regression Report for Positive Parent Contacts
Effect on Attendance

Step	R Square	R Square Change		F Change	p-value	
Group						
Gender						
Negpar	.29		.29	13.32	.00	
Pospar	.35		.06	8.60	.00	

Source	B	S E	B	Beta	t	p-value

Group	-11.25	5.56	-.59		-2.02	.05
Gender	-1.89	3.42	-.05		-.55	.58
Negpar	-.65	.56	-.23		-1.15	.25
Pospar	1.58	.54	.58		2.93	.00
Constant	157.35	5.55			28.36	.00

Effect of Negative Parent Contacts on Attendance

The null hypothesis, for negative parent contacts effect, was: There will be no effect on attendance, for students in this study, based on negative parent contacts. The alternative hypothesis was: There will be an effect on attendance, for students in this study, based on negative parent contacts. The variables, including group membership, positive parent contacts, and gender, were entered as a set into the multiple regression analysis, so as to partial out any variance in attendance attributed to these variables. Once the variance attributed to these variables was partialled out, negative parent contacts accounted for a nonsignificant ($p=.25$) 1% of the adjusted variance in attendance (see Table 25). Therefore, the results of this analysis fail to reject the null hypothesis. There was no effect on attendance, for students in this study, based on negative parent contacts.

Table 25

Multiple Regression Report for Negative Parent Contacts
Effect on Attendance

Step	R Square	R Square Change	F Change	p-value
Group				
Gender				
Pospar	.34	.34	16.74	.00
Negpar	.35	.01	1.33	.25

Source	B	S E B	Beta	t	p-value
Group	-11.34	5.56	-.59	-2.02	.05
Gender	-1.88	3.42	-.05	-.55	.58
Pospar	1.58	.54	.58	2.93	.00
Negpar	-.65	.56	-.23	-1.15	.25
Constant	157.35	5.55		28.36	.00

Effect of Gender on Attendance

The null hypothesis, for the effect of gender on attendance, was: There will be no effect on attendance, for students in this study, based on gender. The alternative hypothesis was: There will be an effect on attendance, for students in this study, based on gender. The variables including group membership, positive parent contacts, negative parent contacts, were entered as a set into the multiple regression analysis, so as to partial out any variance in attendance attributed to these variables.

With these variables partialled out, gender accounted for a nonsignificant ($p=.58$) less than 1% of the adjusted variance in attendance (see Table 26). Therefore, the results of this analysis fail to reject the null hypothesis. There was no effect on attendance, for students in this study, based on gender.

Table 26

Multiple Regression Report for Gender Effect on Attendance

Step	R Square	R Square Change		F Change	p-value	
Group						
Negpar						
Pospar	.35	.35		17.27	.00	
Gender	.35	.00		.30	.58	

Source	B	S E	B	Beta	t	p-value

Group	- 11.25	5.57		-.59	-2.02	.05
Negpar	-.65	.56		-.23	-1.15	.25
Pospar	1.58	.54		.58	2.93	.00
Gender	-1.88	3.42		-.05	-.55	.58
Constant	157.35	5.55			28.36	.00

There was no interaction effect, between group membership and gender, on attendance (see Table 27). A significant main effect was found, on attendance, for group membership ($p=.05$) (see Table 27). Therefore, the results of this analysis fail to reject the null hypothesis. There was no difference in attendance based on an interaction between group membership and gender.

Table 27

Multiple Regression Report for Interaction Effect between
Group Membership and Gender on Attendance

Step	R Square	R Square Change	F Change	p-value
Pospar				
Negpar	.32	.32	23.24	.00
A(Group)	.35	.03	3.93	.05
B(Gender)	.35	.00	.30	.58
AB(Inter)	.35	.03	1.42	.24

Source	B	S E	B	Beta	t	p-value
Pospar	1.56	.55	.57	.57	2.86	.01
Negpar	-.67	.57	-.23	-.23	-1.18	.24
A(Group)	-21.72	11.45	.57	.57	-1.90	.06
B(Gender)	1.86	3.43	.05	.05	.54	.59
AB(Inter)	-2.16	6.86	-.03	-.03	-.32	.75
Constant	156.61	5.73			27.35	.00

Question 4. Will any of the predictor variables including group membership (whether teaming or control), positive parent contacts, negative parent contacts, and gender have an effect on the suspension rate of students identified to be at-risk of repeating the ninth grade?

Means by group were useful in identifying differences in motivation (see Table 28).

Table 28

Group means for Suspensions Utilizing Analysis of Covariance

Dependent Variable	Mean		p-value
	Control	Treatment	
SUSP	2.53	1.65	.04

Mean suspension rate, for the treatment group, (1.65) was found to be slightly lower than the mean suspension rate (2.53) of the control group.

Multiple regression analysis techniques were utilized to identify the amount of variance accounted for by each of the variables when partialling out the variance attributed to all other variables in the model and to identify variables that would be useful in a model to predict suspension rate. The overall model including group membership (teaming or control), positive parent contacts, negative parent contacts, and gender, was found to be significant ($p=.000$) in explaining 22% of the adjusted variance in attendance (see Table 29).

Table 29

Multiple Regression Report for Suspension

Step	R Square	R Square Change	F Change	p-value
GROUP				
POSPAR				
NEGP				
GENDER	.22	.22	6.57	.00

Analysis of Variance

Source	SS	DF	MS	F-ratio	p
Regression	280.10	4	70.03	6.5727	.0001
Residual	1012.14	95	10.65		

Effect of Group Membership on Suspension Rate

The null hypothesis, for the group membership effect, was: There will be no effect on suspension rate, for students in this study, based on group membership. The alternative hypothesis was: There will be an effect on suspension rate, for students in this study, based on group membership.

The variables, including positive parent contacts, negative parent contacts, and gender, were entered as a set into the multiple regression analysis, so as to partial out any variance in suspension rate attributed to these variables.

With the variance attributed to these variables partialled out, group membership (whether teaming or control) accounted for a nonsignificant ($p=.72$) less than 1% of the adjusted variance in suspension rate (see Table 30). Therefore, the results of this analysis fail to reject the null hypothesis. There was no effect on suspension rate, for students in this study, based on group membership.

Table 30

Multiple Regression Report for Group Membership Effect on
Suspension Rate

Step	R Square	R Square Change	F Change	p-value
Gender				
Negpar				
Pospar	.22	.22	8.80	.00
Group	.22	.00	.13	.72

Source	B	S E B	Beta	t	p-value
Gender	-.61	.70	-.08	-.86	.39
Negpar	.27	.12	.50	2.33	.02
Pospar	-.11	.11	-.22	-1.02	.31
Group	-.41	1.15	-.11	-.36	.72
Constant	1.69	1.14		1.47	.14

Effect of Positive Parent Contacts on Suspension Rate

The null hypothesis, for the effect of positive parent contacts on suspension rate, was: There will be no effect on suspension rate, for students in this study, based on positive parent contacts. The alternative hypothesis was: There will be an effect on suspension rate, for students in this study, based on positive parent contacts. The variables, including group membership, negative parent contacts, and gender, were entered as a set into the multiple regression analysis, so as to partial out any variance in suspension rate attributed to these variables. With the variance attributed to these variables partialled out, positive parent contacts accounted for a nonsignificant ($p=.31$) 1% of the adjusted variance in suspension rate (see Table 31). Therefore, the results fail to reject the null hypothesis. There was no effect on suspension rate, for students in this study, based on positive parent contacts.

Table 31

Multiple Regression Report for Positive Parent Contacts
Effect on Suspension Rate

Step	R Square	R Square Change	F Change	p-value
Group				
Gender				
Negpar	.21	.21	8.41	.00
Pospar	.22	.01	1.04	.31

Source	B	S E	B	Beta	t	p-value
Group	-.41	1.15	-.11	-.36	-.36	.72
Gender	-.61	.70	-.08	-.86	-.86	.39
Negpar	.27	.12	.50	2.33	2.33	.02
Pospar	-.11	.11	-.22	-1.02	-1.02	.31
Constant	1.69	1.14		1.47	1.47	.14

Effect of Negative Parent Contacts on Suspension Rate

The null hypothesis, for negative parent contacts effect, was: There will be no effect on suspension rate, for students in this study, based on negative parent contacts. The alternative hypothesis was: There will be an effect on suspension rate, for students in this study, based on negative parent contacts.

The variables, including group membership, positive parent contacts, and gender, were entered as a set into the multiple regression analysis, so as to partial out any variance in suspension rate attributed to these variables. Once the variance attributed to these variables was partialled out, negative parent contacts accounted for an additional, yet significant ($p=.02$) 4% of the adjusted variance in suspension rate (see Table 32). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted as stated. There was an effect on suspension rate, for students in this study, based on negative parent contacts.

Table 32

Multiple Regression Report for Negative Parent Contacts
Effect on Suspension Rate

Step	R Square	R Square Change	F Change	p-value	
Gender					
Pospar	.17	.17	6.65	.00	
Negpar	.22	.04	5.41	.02	

Source	B	S E B	Beta	t	p-value

Group	-.41	1.15	-.11	-.36	.72
Gender	-.61	.70	-.08	-.86	.39
Pospar	-.11	.11	-.22	-1.02	.31
Negpar	.27	.12	.50	2.33	.02
Constant	1.69	1.14		1.47	.14

Effect of Gender on Suspension Rate

The null hypothesis, for the effect of gender on suspension rate, was: There will be no effect on suspension rate, for students in this study, based on gender. The alternative hypothesis was: There will be an effect on suspension rate, for students in this study, based on gender.

The variables including group membership, positive parent contacts, negative parent contacts, were entered as a set into the multiple regression analysis, so as to partial out any variance in suspension rate attributed to these variables.

With these variables partialled out, gender accounted for a nonsignificant ($p=.39$) 1% of the adjusted variance in suspension rate (see Table 33). Therefore, the results of this analysis fail to reject the null hypothesis. There was no effect on suspension rate, for students in this study, based on gender.

Table 33

Multiple Regression Report for Gender Effect on Suspension Rate

Step	R Square	R Square Change	F Change	p-value	
Group					
Negpar					
Pospar	.21	.21	8.54	.00	
Gender	.22	.01	.74	.39	

Source	B	S E B	Beta	t	p-value

Group	-.41	1.15	-.11	-.36	.72
Negpar	.27	.12	.50	2.33	.02
Pospar	-.11	.11	-.22	-1.02	.31
Gender	-.61	.70	-.08	-.86	.39
Constant	1.69	1.14		1.47	.14

There was no interaction effect, on suspension rate, between group membership and gender (see Table 34). Therefore, the results of this analysis fail to reject the null hypothesis. There was no effect on suspension rate as a result of an interaction between group membership and gender.

Table 34

Multiple Regression Report for Interaction Effect between
Group Membership and Gender on Suspension Rate

Step	R Square	R Square Change	F Change	p-value
Pospar				
Negpar	.21	.21	12.90	.00
A(Group)	.21	.00	.07	.79
B(Gender)	.22	.01	.74	.39
AB(Inter)	.23	.01	.14	.71

Source	B	S E B	Beta	t	p-value
Pospar	-.12	.11	-.23	-1.05	.30
Negpar	.27	.12	.50	2.26	.02
A(Group)	-.62	2.36	-.87	-.27	.79
B(Gender)	.60	.71	.08	.85	.40
AB(Inter)	-.52	1.42	-.04	-.37	.71
Constant	1.43	1.18		1.21	.23

Summary of Results

Although it was expected that group membership would have a significant effect on achievement, only positive parent contacts demonstrated statistical significance in predicting achievement.

No variables were statistically significant in predicting motivation as most of the variance in motivation can be attributed to the premotivation measure.

Group membership and positive parent contacts were found to have a significant effect on attendance, while negative parent contacts proved to have a significant effect on suspension rate.

Chapter V

Summary, Conclusions, and Recommendations

American public secondary schools are no longer serving merely an academically and intellectually elite college bound population. Yet, instructional practices continue to prevail much as they did nearly 200 years ago. These practices are no longer meeting the needs of a population much more representative of the American citizen. Thus, there must be an effort toward identifying and implementing strategies that will address the individual differences of both college and non-college bound students.

Proponents of teaming contend that schools today tend to be too large to meet the needs of most students (Sizer, 1988; Boyer, 1983; Arhar, Johnston, and Markel, 1989). By organizing students and teachers into what Sizer (1988) calls "schools-within-schools, smaller communities of students and teachers may become engaged in a more focused curriculum (Powell, 1985; Sizer, 1986). Although the focus is on educational goals, it is the individuality of the student, not the curriculum, that becomes the driving force (Wehlage, 1987).

A quasi-experimental Pretest - Posttest control group design was used to determine whether group membership (teaming or control), positive parent contacts, negative

parent contacts, and gender have an effect on the academic achievement (as measured by core subject area grade point average), motivation (as measured by the School Attitudes Measure), attendance, and suspension rate of students identified to be at-risk of repeating the ninth grade.

Participants in this study included 100 students identified to be at-risk of repeating the ninth grade, on the basis of poor performance during the eighth grade year. Fifty of these students participated, through an application process, in the treatment group. Students were selected for the program because they had poor grades and had been referred by counselors, teachers, and parents. This treatment group received interdisciplinary teaming of the four core subject areas (math, science, English, and social studies) and frequent parent contacts during the ninth grade year. An additional fifty students, composing the control group, were selected by a matching process on the IOWA Tests of Basic Skills composite score, composite grade point average from the eighth grade, subject area grade point average in the core subjects (math, science, and English), and gender. Students in the control group followed a traditional departmentalized schedule during the ninth grade year.

Summary of Findings

The following presents the four major research questions of this study and their significant findings.

Research Question 1. Will any of the predictor variables including group membership (teaming or control), positive parent contacts, negative parent contacts, and gender have an effect on the academic achievement of students identified to be at-risk of repeating the ninth grade?

The overall model explained 68% of the adjusted variance in academic achievement, while only 32% of the adjusted variance is attributed to variables beyond the scope of this study. In the particular study, members of the treatment group had a mean post grade point average of 1.77, while members of the control group had a mean post grade point average of 1.01.

Positive parent contacts emerged as the only statistically significant ($p=.00$) variable, accounting for 15% of the adjusted variance in academic achievement. No significant effects were found for negative parent contacts, group membership, and gender. Likewise, there was no significant interaction effect between group membership and gender or for their related main effects.

Research Question 2. Will any of the predictor variables including positive parent contacts, negative parent contacts, and gender have an effect on the motivation of students identified to be at-risk of repeating the ninth grade, who are participating in teaming?

Motivation was measured using the motivation subtest on the School Attitudes Measure. The overall model explained 40% of the adjusted variance in motivation. No predictor variables accounted for a significant amount of the variance in motivation.

Research Question 3. Will any of the predictor variables including group membership (teaming or control), positive parent contacts, negative parent contacts, and gender have an effect on the attendance of students identified to be at-risk of repeating the ninth grade. The overall model explains 35% of the adjusted variance in attendance, while

65% of the adjusted variance is attributed to variables not included in this study. In this particular study members of the treatment group had a significantly lower number of days in attendance ($M=154.20$) than their control group counterparts ($M=162.31$). It was expected that the treatment group would have a greater number of days in attendance. However, results of this study indicate that those students in the treatment group, had on average, 8 fewer attendance days than their control group counterparts. It is likely, that the differences found in attendance are due to outliers in the treatment group. Five students in the teaming group had fewer than 100 days in attendance. These outliers may have resulted in a skewed distribution. The use of an aptitude measure, as indicated previously, in conjunction with classroom academic grades, may provide more valuable information in indicating the types of students that are accepted into this program. Group membership and positive parent contacts emerged as statistically significant ($p=.00$) in accounting for variance in attendance. Although no effect on attendance was found for the interaction between group membership and gender, a negative main effect for group membership was found to be significant.

Research Question 4. Will any of the predictor variables including group membership (teaming or control), positive parent contacts, negative parent contacts, and gender have an effect on the rate of suspension of students identified to be at-risk of repeating the ninth grade?

The overall model was found to be statistically significant in explaining 22% of the adjusted variance in suspension rate. Therefore, 78% of the adjusted variance is controlled by factors not included in this study. Significant results were found for negative parent contacts, while no effect resulted from positive parent contacts, group membership, or gender. Likewise, no significant effect, on suspension rate, was found for the interaction between group membership and gender or for their related main effects.

Conclusions

In this study of 100 ninth grade student, identified to be at-risk of repeating the ninth grade on the basis of poor academic performance in the three core subject areas (math, science, and English) during the eighth grade year, positive parent contacts emerged as having a statistically significant role in accounting for the variance in academic achievement and attendance.

Through the implementation of interdisciplinary teaming, the traditionally departmentalized high school may be reorganized so as to provide the frequent contact with parents that is necessary to effect academic achievement and attendance. Although teaming itself was found only to have a significant negative effect on attendance, there are other advantages to teaming that go beyond the scope of this study but would certainly be worth investigating.

Discussion

Analysis of the results suggests that perhaps an alternative selection procedure, for the treatment group, be considered. Although no aptitude measure was used in selecting students for the alternative education program, use of such a tool may prove more informative than the use of a standardized achievement test. The IOWA Tests of Basic Skills composite score provided no substantive information regarding an individual's potential for repeating the ninth grade.

Although not investigated in this study, the use of an aptitude measure, in combination with classroom academic achievement grades, may identify students who have poor academic achievement due to a lack of ability, as opposed to those who are not achieving for a variety of other reasons.

The selection procedure, for this study, did not differentiate between low achievers and underachievers other than it excluded students who were already receiving services through the special education department. As a result, the extent to which these students were grouped by ability, either homogeneously or heterogeneously, cannot be determined.

It would be not only advantageous, but more appropriate as well, to establish selection criteria whereby students are selected based on some degree of underachievement. This would ensure a more heterogeneous group of students in the program. Due to the lack of an ability measure, for this study, the grouping of students in this particular alternative education program, through the current selection criteria, may indeed be very homogeneous in nature.

Although no significant results were found for any of the predictor variables in accounting for the variance in motivation, beyond the pretest measure, this variable is probably a construct worthy of further study. The motivation scale on the School Attitudes Measure was used for this particular study as testing materials were available through the school division. Therefore, no other measures of motivation were considered.

However, the motivation scale on the School Attitudes Measure demonstrated a reliability of .84 squared or .70. This indicated that 70% of the scale variance is attributed to true score, while 30% of the variance is attributed to error. Therefore, with an instrument allowing for 30% error, even if the predictor variables had an effect on motivation, it is unlikely that significance would be found.

In addition to the weakness of the instrument used to measure motivation, it is likely that the timing of the test may have influenced the results. The posttest measure was administered to students during the first week in June, directly following the administration of another standardized assessment tool. Due to the length of the first assessment, it is my observation that the students were simply tired of the testing process and therefore completed the assessment as rapidly as possible. At least three students were observed making random markings on their answer sheets.

Although not an academically oriented instrument, the task of completing this assessment may have proved to be too rigorous at that particular time. Having students complete the assessment in a more relaxed environment may have produced different results.

One of the most significant findings of this study is the effect of positive parent contacts on academic achievement and attendance. This study did not investigate the effectiveness of different means by which parental contacts could possibly take place; rather, it determined that these contacts are indeed significant.

Although group membership provided no statistically significant effect on academic achievement, interdisciplinary teaming provides the resources necessary to facilitate frequent teacher-parent interactions. Educators may very well be aware of the potential rewards of making regular and frequent contact, but it is unlikely that such personal contact will be made outside the parameters of teaming. In this particular case it is clear that teachers participating on a team made parent contacts, while those outside the parameters of teaming did not.

In the typical, departmentalized environment, a secondary school teacher maintains a class roster of nearly 150 students. Even if the classroom teacher is diligent in making 15 calls per week, as prescribed by this study, communication with the parents of each student will likely be limited to less than four contacts per year. This certainly would not be frequent enough to produce significant effects on academic achievement or attendance.

Additionally, teachers are likely to view this approach as burdensome and just something else that they are expected to do within the confines of the contractual day.

Through interdisciplinary teaming, the number of students assigned to the team may be divided equitably among the team teachers. Thus, the number of parents that the teacher would be responsible for contacting would be greatly diminished from that of the regular classroom teacher. Although team teachers may continue to make 15 calls per week, these calls will be to the same 15 or so parents. Thus, a closer relationship between student and teacher and teacher and parent may be established.

There may be additional means by which contacts may be achieved such as through teacher assistants and parent volunteers making contacts or through electronic means such as voice mail. Although these may be viable alternative, which demand less time from teachers, the degree to which alternative methods of parent contacts are effective is of interest, but beyond the scope of this study.

Although not found to be statistically significant, group membership did produce some satisfying results that could not be quantified within the design of this study. Beyond the scope of this study, however, as a means of encouraging teaming across the ninth grade, the team members

produced a videotape which included interviews with students involved in the treatment group.

Many students expressed the belief that the team teachers truly cared about them as individuals and that this caring attitude allowed them to develop a closer relationship with these teachers. This was evident throughout the teaming process as students frequently shared problems and concerns that they had beyond the parameters of the classroom. Most of the interviewed students indicated that they would be more likely to bring a problem to one of the team teachers before seeking assistance from either guidance counselors or their peers.

In addition to the close relationships established between students and team teachers, students expressed that their self-esteem had been positively affected. Many of these students became actively involved in extra-curricular activities where they had not done so in previous years. Discussion with the students revealed that they had greater self-confidence and were not afraid of being rejected.

As these students began their tenth grade year, it was observed that they had indeed developed deep, long lasting friendships with their teammates. This camaraderie was observed in the community as well as in the school environment as students looked out for each other's well

being. A majority of the students continue to drop in on the team teachers on a regular basis, even those that were not particularly successful in academic achievement.

A majority of these individuals indicated that they felt a sense of loss as a support system, for them, was no longer in place. This concern was magnified by the belief that their tenth grade teachers were more concerned with curriculum than with them as individuals. Given the opportunity, if a tenth grade team existed, all interviewed students indicated that they would have chosen to continue in the teaming environment.

Program Recommendations

Careful analysis and discussion of the significant findings of this study suggests several program recommendations.

1. The use of an ability measure, rather than a standardized achievement measure, may provide more useful information regarding the nature of a student's poor performance at the eighth grade level. The use of such a measure may also result in a more heterogeneous grouping of students, by ability level, than the selection techniques currently being employed. The use of the standardized

achievement score, although available, provides no substantive information to the selection process. It is also suggested that the way in which students are attracted to and accepted into the program be examined. The current method of selection, may bring in a different type of student as indicated by the analysis on attendance rate. The selection procedure may be refined to more clearly define the type of student that the program is servicing.

2. As the motivation scale on the School Attitudes Measure attributes 30% of its scale variance to error, it is suggested that the use of this particular instrument, as a measure of motivation, be discontinued. It is not worth the school division's time or money to take away instructional time for the implementation of this measure. Further, the costs incurred in materials and scoring cannot be justified unless the overall instrument can provide reliable and meaningful information to the participants of this project.

If motivation is a variable of interest, it is recommended that other measures of motivation, that can more accurately assess this construct, be considered.

3. The motivation assessment instrument should be implemented during a period of time free from the pressures

of other testing situations. For this program, it is suggested that the instrument be administered during the early part of May. This would allow ample time for growth in motivation to occur, yet allow for an environment free of standardized measures and final examinations.

4. Because positive parent contacts produced significant results for academic achievement and attendance, it is recommended, until other means of parental communication can be evaluated, that interdisciplinary teaming continue to be employed as a means of providing the resources necessary for maintaining effective teacher-parent communication.

It is further recommended that the use of these techniques be employed, not only to assist at-risk ninth graders in making the transition from eighth grade to high school but all students at this particular grade level. Not only will more students benefit from the effects of increased teacher-parent communication, but by teaming all students, a program with a specialized name could be avoided so as to alleviate any stigma which may become attached to students feeling that they had been "labeled". Additionally, by teaming all students at a particular grade level, a more heterogeneous grouping would be achieved by randomly assigning all students to teams. Thus, a wide

range of student characteristics would be found on all teams. Members of randomly assigned teams would have the opportunity to interact with all types of students, previously unsuccessful or successful, rather than being limited to these interactions only in physical education and an elective. By nature of the block schedule, many of these teamed students were in physical education and their electives with many of the same students on the team.

5. If it is not possible, through teaming, to engage the faculty in proactive dialogue through regular phone contact with parents, then school personnel must make an effort to improve parent contacts in some other manner.

6. Although not found to be statistically significant in explaining the variance in academic achievement, motivation, or suspension rate, interdisciplinary teaming may have significant effects on variables not included in this study. It may be not only a means of making connections across the content areas, but a means of enhancing the learning environment. By allowing team members to make decisions regarding the best interests of their students, the flexibility afforded through teaming may

certainly have significant effects for teachers, students, and the curriculum. Therefore, it is recommended that interdisciplinary teaming continue to be employed as a means of easing the transition from middle school to high school.

Research Recommendations

1. Because this study found significant results for an effect for positive parent contacts on the academic achievement of students identified to be at-risk of repeating the ninth grade, further studies may be encouraged to focus on all ninth graders as a means of enhancing the transition from middle school to high school for all students.
2. Longitudinal studies may provide interesting findings that indicate whether positive parent contacts and interdisciplinary teaming have an effect on the drop out rate of high school students.
3. For future studies choosing to duplicate this particular research, careful consideration should be given to a more appropriate selection criteria. The use of standardized

ability measures rather than achievement measures may prove to be more satisfying.

4. Because the School Attitudes Measure attributes 30% of its scale variance to error, it is recommended that researchers interested in measuring this construct investigate the possibility that other instruments may exist that will more adequately measure motivation. Even if there had been significant results, for this study, with an instrument yielding 30% of its variance to error, it is unlikely that this significance could be found.

5. Through observation, the effects of teaming not measured by this study do indeed appear to be substantial. It is therefore recommended that future studies focus on research methods that may quantify these effects in a meaningful way. The independent variable, interdisciplinary teaming, was not measured in this study. In order to effectively measure this construct, the researcher must be able to determine to what extent students benefit from the teaming experience. To accomplish this task, students receiving teaming should not be lumped into one group on the assumption that all students respond equally to the teaming process and therefore receive equal benefit. Future research must concentrate on determining how students see, feel,

understand, and react to teaming. It is becoming obvious that the teaming construct is far too complex to be analyzed through the use of traditional quantitative methods. As research on teaming is rather analogous to research conducted on family units, further research should be addressed in a more qualitative, case study approach. Thus, researchers would be wise to consider a more qualitative approach to assessing interdisciplinary teaming.

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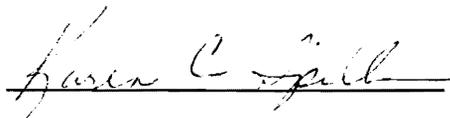
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A handwritten signature in cursive script that reads "Karen C. Spillman". The signature is written in dark ink and is positioned to the right of the typed text.