THE EFFECTS OF AN INTERDISCIPLINARY PROGRAM UPON STUDENTS' ACHIEVEMENT, ATTENDANCE, AND ATTITUDE

DISSERTATION

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

For the Degree of

DOCTOR OF PHILOSOPHY

By

Deborah Wester Jacob, B.A., M.Ed.
Denton, Texas

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Some educational reform efforts have focused upon the internal organization of the high school and have included attempts to reduce its size and to make learning experiences more personal and relevant. The purpose of this study was to investigate the effects of Project SAIL, a program designed to increase student achievement through interdisciplinary learning, upon the achievement, attendance, and attitude toward school of the ninth grade students who participated in it. The study also identified its benefits and liabilities from the perspective of teachers and students.

The population consisted of 135 ninth grade students who attended high school in a large suburban school district in North Central Texas. The experimental group was composed of 93 students who participated in Project SAIL while the control group contained 42 students who did not participate. Project SAIL students were taught by four teachers who shared a common planning period and also instructed the students in a fifth course, Peer Assistance and Leadership. The control group was taught by teachers working independently.

Analysis of covariance procedures were used to analyze the students' achievement in English I and Algebra I as well as their attitude toward school as reflected on the School Attitude Measure. An independent samples t test was used to compare attendance rates of the two groups. Benefits and liabilities were identified by interviewing the four teachers three times during the year. Ten students were interviewed at the end of the year to determine their reaction to the project. A categorical coding system was used to analyze transcripts of all interviews.

Analysis of statistical data showed that students who participated in Project SAIL did as well as students who did not participate in terms of achievement, attendance, and attitude toward school. Data gathered in interviews indicated that students and teachers had a positive attitude about the experience and believed that the interdisciplinary approach was effective and offered needed support for students and teachers.

TABLE OF CONTENTS

Table of Contents (Continued)

LIST OF TABLES

CHAPTER I

INTRODUCTION

The 1980's will long be remembered as the decade of sweeping educational reforms ignited to a large extent by the publication of A Nation at Risk in April, 1983 (Bell, 1993). Bell characterizes the ten years following its release as a time of "splendid misery for American education" (p. 597). The American high school, in particular, became the object of careful scrutiny and widespread criticism as the United States realized that "its traditional form of schooling did not produce enough well-educated individuals to drive its economy" (Oxley, 1994, p.525). Employers as well as university faculty members are still expressing concern about the basic skill deficiencies exhibited by high school graduates (Roberts & Cawelti, 1984; Wagner, 1993) while corporate executives and minority group leaders are extremely distressed about the one out of four students who never complete high school (Cuban, 1993). In 1983, Lightfoot pointed out that "the last few decades has produced a cultural attitude towards schools which assumes their inadequacies and denies evidence of goodness" (p. 314), and Boyer (1983) found that "a deep erosion of confidence in our schools, coupled with disturbing evidence that at least some of the skepticism is justified, has made

revitalizing the American high school an urgent matter" (p. 6). Unfortunately, "after a decade of education reform efforts, most high schools remain about the same" (Wagner, 1993, p. 701), and "sufficient problems have surfaced . . . [to] prompt efforts to fundamentally change existing high school structures" (Cuban, 1993, p. 6). Indeed, the Task Force on High School Education created by the Texas State Board of Education (1992) states that the academic underachievement of high school students is a direct threat to the economic, social, and political future of the state.

In the search for solutions to the puzzle of how to improve the American high school, many investigators have focused upon the internal organizational features of schools. They have found that smaller high schools where teachers and students have ample opportunities for interaction and where the courses of study have relevancy appear to be most effective (Bryk & Thum, 1989). This answer should not be particularly surprising, for it is certainly not a new idea. In the early twentieth century, John Dewey was urging educators to teach the whole child and insisting that subject matter isolated from the learner's needs becomes something merely to be memorized and reproduced upon demand (Sizer, 1984). "Indeed, with the addition of a few computers, John Dewey's 1900 vision of the 20th-century ideal is virtually identical to current scenarios for 21st-century schools" (Darling-Hammond, 1993,

p. 755). Unfortunately, many modern high schools are quite large, and emphasis is usually placed upon specific subjects rather than upon relationships among subjects and/or people.

The freshman year is an especially critical time in the life of many students. Although the students most enthusiastic about high school are generally those who have yet to take their first high school class, educators have long recognized that schools often fail to capitalize upon that enthusiasm and that ninth grade students sometimes have a difficult time succeeding academically and/or emotionally during their first year of high school (Riley, 1984). Some never adjust and become a statistic, adding to the already high dropout rate. Others manage to meet the minimum requirements and graduate but enter the work force or a junior college, ill-equipped to face the challenges ahead.

Project SAIL (Student Achievement through Interdisciplinary Learning) was the attempt of one group of high school teachers to develop a program to address the unique needs of ninth grade students and to ensure them a successful adjustment to high school. After examining the successful use of interdisciplinary teams and units as well as advisory periods at the middle school level (MacIver & Epstein, 1990), these teachers determined that the same strategies could be effectively employed with ninth grade students. Their objective was twofold in that they wanted to give these students a sense of belonging despite the

large size and impersonal nature of a high school and they wanted to implement a curriculum that emphasized relevancy among academic subjects and to the real world. If they accomplished either of these objectives, they would have not only significantly affected the lives of their students but also contributed another piece to the puzzle of how to improve the American high school.

Statement of the Problem

The problem of this study was to determine the effects of participation in Project SAIL upon the achievement, attendance, and attitude toward school of ninth grade students.

Research Hypotheses and Questions

1. There will be no significant difference in mean scores obtained from the teacher-developed, end-of-course English I test between ninth grade students who participate in Project SAIL and ninth grade students who do not participate in the program.
2. There will be no significant difference in mean scores obtained from the Texas Education Agency-developed, end-of-course Algebra I test between ninth grade students who participate in Project SAIL and ninth grade students who do not participate in the program.
3. There will be no significant difference in the average daily attendance rates between ninth grade students who

participate in Project SAIL and ninth grade students who do not participate in the program.

4. There will be no significant difference in the mean scores obtained from the School Attitude Measure between ninth grade students who participate in Project SAIL and ninth grade students who do not participate in the program.
5. What are some specific benefits of interdisciplinary teaming as perceived by the teachers?
6. What are some specific liabilities of interdisciplinary teaming as perceived by the teachers?
7. What are students' verbal reactions to participation in Project SAIL?

Significance of the Study

The purpose of Project SAIL was to assist ninth grade students in making a successful transition to high school by enabling them to achieve academically and by giving them a sense of belonging despite the large, impersonal nature of a high school. This study examines the achievement of these students in English I and Algebra I as well as their school attendance and their attitude toward school to determine if Project SAIL did indeed make a significant difference. In addition, it attempts to determine the benefits and liabilities of the project from the perspective of the teachers involved as well as what the reactions of the students were to the project. As high schools attempt to restructure

their programs to improve student achievement, attitude, and attendance, this is certainly a model they should consider. The teachers' analysis of the project during its implementation phase is invaluable to others attempting to develop such a program. The students' viewpoint provides yet another perspective on the project.

Definition of Terms

1. Attitude - in this study attitude will be defined as a score indicating favorable or unfavorable responses as measured by the School Attitude Measure.
2. Essential elements - in this study essential elements will be defined as the elements to be learned to prove mastery of a course as mandated by the Texas Education Agency.

Instruments

Three instruments were used to collect statistical data:

1. A teacher-developed, end-of-course English I test
2. A Texas Education Agency-developed, end-of-course Algebra I test
3. The School Attitude Measure (SAM)

The average daily attendance rates for ninth grade students in these two groups as reported on the Public Education Information Management System (PEIMS) were also used.

The English I test was developed by teachers who had students in the control group and the teacher who had students in the experimental group. It consisted of 100 objective questions that tested mastery of the English I essential elements. After the teachers created the test, it was reviewed by the district language arts coordinator to establish content validity by ensuring that it addressed the essential elements of the course. The Algebra I test was developed by the Texas Education Agency for use in all Texas schools and tested mastery of the Algebra I essential elements.

The School Attitude Measure (SAM) was developed by Dolan and Enos (1980). It is a self-report survey instrument designed to provide evaluation of students' affective response to their school experience. It provides information on five attitudinal scales:

1) motivation for schooling
2) academic self-concept/performance based
3) academic self-concept/reference based
4) student's sense of control over performance
5) student's instructional mastery

Five levels of SAM were developed for testing students in grades 1 through 12. Level K/L for grades 9-12 consists of 100 statements and takes about 35 minutes to complete. Students respond to each statement by indicating whether they "never agree," "sometimes agree," "usually agree," or

"always agree." Each of the subscales contains 20 items, and some begin with a positive stem while others begin with a negative stem.

A total score for SAM was given to reflect the student's attitude toward school as determined by the data from the five subscales. Raw scores were transformed into normal curve equivalents (NCE's) which are similar to percentiles except that they can be averaged. NCE's are almost identical to percentile ranks in the middle ranges but more moderate at the extremes.

An interview schedule was developed in order to obtain data from the four teachers participating in Project SAIL. They were interviewed three times during the year, using questions which were open-ended in nature. (See Appendix A.) An interview schedule was also developed for use with ten students participating in the project who served as informed respondents. They were interviewed in May using questions which were also open-ended in nature. (See Appendix B.)

Procedures for Collection of Data

Population

The population for this study was ninth grade students attending a high school located in a large suburban school district in North Central Texas. The experimental group consisted of 93 ninth grade students who were participating in Project SAIL because they enrolled in the four courses

designated for the program. At the time of course selection, they did not know that the program would be implemented. The control group consisted of students who did not enroll in those four courses but who were taking English I and/or Algebra I. Forty-two students were in the English I control group, and 36 students were in the Algebra I control group. Some of these were the same students. Students who were enrolled in any Honors English I, Honors Algebra I, Special Education, English as a Second Language, and/or basic classes were not included in either group.

Research Design

Project SAIL was the creation of a group of high school teachers who were very concerned about the high failure rate and low attendance rate of many freshman students. They began to explore both causes and solutions. Their research led them to an examination of successful practices at the middle school level and to a visit to a high school that was experimenting with the concept of interdisciplinary teaming. These teachers became convinced that an interdisciplinary team of four teachers who shared a common group of students and a common planning period could make a difference in the achievement, attendance, and attitude toward school of the students for whom they were responsible. Project SAIL was the result of their efforts.

This study examined the impact of Project SAIL upon ninth grade student achievement in English I and Algebra I

as well as school attendance and attitude toward school. Approximately 100 students who were enrolled in these two subjects as well as in Biology I and World History were targeted for participation in the program. A control group of approximately 45 students who were enrolled in English I and in Algebra I was also identified. Students involved in Project SAIL were taught by the same four teachers in English I, Algebra I, Biology I, and World History as well as in a course entitled Peer Assistance and Leadership (PAL). The PAL course was scheduled during one period so that all four classes could meet together when necessary and teachers could group the students according to the activity planned. Since all students attending this high school are enrolled in eight courses, these students took three other courses which varied. The schedule for all students is an alternating one with students attending four classes a day.

During the summer of 1993, the four teachers were trained to teach the PAL course and worked together to develop an interdisciplinary approach to their subjects. They also created a set of classroom procedures and guidelines that all four used. During the school year they shared a common planning period every other day to allow them to continue to work together and to confer with students and parents as needed. Students not involved in the project were taught by teachers working independently and were not enrolled in the PAL course.

A pretest-posttest control group design was used to determine student attitude. SAM, the instrument used to measure student attitude toward school, was administered to students in the experimental group and the control group two times during the school year. The first administration occurred during the first six weeks of school in 1993. The second administration took place during the last six weeks of school in 1994. Student achievement was measured by a posttest-only control group design. The end-of-course tests in English I and Algebra I were administered in May, 1994. The average daily attendance rates were taken from the PEIMS report for the 1993-1994 school year. Teachers participating in Project SAIL were interviewed during the first six weeks of school, in January, and in May. The purpose of the first interview was to determine their expectations for the project, the second one was to check on the progress of the project in the middle of the year, and the third one gave teachers an opportunity to reflect upon the implementation of the project. Ten students participating in the project were interviewed in May so that they could reflect upon their participation in it.

Procedures for Analysis of Data

The data used for statistical analysis of achievement were the mean scores for the two groups from the English I achievement test and the Algebra I achievement test along with their scores on the Norm-Referenced Assessment Program

for Texas (NAPT), which was administered to eighth grade students in April, 1993. Analysis of covariance was used to determine if a significant difference existed between the two groups. In one analysis the posttest score on the English I test was the dependent variable while the language score on the NAPT test served as the covariate. In the other analysis the posttest score on the Algebra I test was the dependent variable, and the math score on the NAPT test was the covariate. The use of the analysis of covariance controlled statistically any initial differences in the students which might have been present and which might have confounded differences between the two groups of students.

The data used for statistical analysis of attitude were the mean normal curve equivalents for the two groups from SAM. Data were analyzed through the use of analysis of covariance. Posttest means were compared after having been adjusted for any differences between the two groups with respect to pretest means.

A comparison was also made of the average daily attendance rates for ninth grade students in the two groups. These figures were taken from the PEIMS report for the 1993-1994 school year, and an independent samples *t* test was used to compare the group means.

The teacher interviews and the student interviews were audiotaped and transcribed to written format. Each taped teacher interview was then analyzed and coded for statements

related to the benefits and the liabilities of inter-disciplinary teaming as perceived by the teachers. Student interviews were analyzed and coded for statements describing any connections noted among the four subjects, any factors that made these subjects interesting or boring, and any advantages or disadvantages that resulted from the inter-disciplinary teaming or the PAL course as perceived by the students. Common themes were then identified.

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CHAPTER II

REVIEW OF RELATED LITERATURE

This review summarizes the research on the modern American high school, focusing upon its structure, the relationship among the disciplines, and the relationship between teachers and students. The review is divided into four sections. Section I deals with difficulties in defining the problems of the high school, Section II examines studies on the structure of high schools, including their size and attempts to reorganize them, Section III explores the relationship among the disciplines, and Section IV considers the relationship between teachers and students.

I. Assessing the High School

The release in 1983 of the National Commission on Excellence report, A Nation at Risk, focused the attention of Americans upon the high school and began a period of inquiry, examination, and evaluation. The need for such scrutiny cannot be disputed as the literature of secondary schools is indeed a sparse one, lacking sufficient description of school practices (Perrone, 1985). Part of this problem lies in the large amount of variation among high schools. "While all popular descriptions . . . fit some high schools, they seldom describe, in any significant

sense, most high schools" (Perrone, 1985, p. 2). Thus, the difficulties inherent in defining the dilemma hinder efforts to find and implement solutions. The issue is made more complex by the lack of clear criteria for evaluation. As Lightfoot (1983) points out:

> The search for "good" schools is elusive and disappointing if by goodness we mean something close to perfection. . . . In fact, one could argue that a consciousness about imperfections, and the willingness to admit them and search for their origins and solutions, is one of the important ingredients of goodness in schools. (p. 309)

Despite these obstacles, researchers have continued their careful examination of schools, focusing upon several salient elements.

II. Structure of High Schools

One dimension that has attracted the attention of many investigators is the size of the high school. Bell (1993) states that:

> The simple fact is that very large schools and very large districts have a difficult time responding quickly and flexibly to problems that are associated with student failure. Seldom do we see a huge secondary school that is a distinguished institution. . . . The massive secondary schools must be downsized. (p. 597)

Oxley (1994) points out that "research indicates that large school size adversely affects attendance, school climate, and student involvement in school activities and contributes to higher rates of dropping out, vandalism, and violence" (p. 521).

Unfortunately, "after more than a century of public education, educators still don't agree on an optimum size for high schools" (Bleiberg, 1993, p. 16A) although research suggests that smaller schools offer a more supportive environment where students do better academically (Bleiberg, 1993). Boyer (1983), Bullough (1988), and Wood (1992) recommend that large high schools organize themselves into smaller units, schools-within-a-school, and Goodlad (1984) points out that the creative reorganization of a large school could result in some of the advantages of a small school. Goodlad also acknowledges, however, that the effect of schools-within-schools has been negligible in practice. In New York, for example, administrators are now physically separating a large school into smaller schools in different buildings because creating schools-within-a-school proved not to be successful (Bleiberg, 1993, p. 17A). As recently as 1993, Lee, Bryk, and Smith found that:

> While size clearly influences the structure of interactions within a school, there have been some attempts on the margin of the organization to mitigate the effect of size on communication, cohesion, roles, and management organization (e.g., establishing schools within schools or house systems). These efforts have been only partially successful. (p. 188)

At the same time, they point out that the alleged benefits of large comprehensive high schools, such as greater specialization, resource strength, and efficiency, have not been proved and that more negative effects have materialized. "Large high schools are characterized by socially

stratified learning opportunities and the resulting academic outcomes, as well as by some increase in the alienation and detachment of students and teachers from the school and its aims" (pp. 188-189). Bryk and Thum (1989) conclude from their analyses of distinctive organizational environments that smaller high schools where teachers and students can interact informally and where teachers are committed to working with students are the most effective.

This need to reduce the high school to a more manageable, more personal size has manifested itself in numerous examples of reorganization. Several members of ASCD's High School Futures Planning Consortium, such as Fox Lane High School in Bedford, New York, and Schenley High School Teacher Center in Pittsburgh, Pennsylvania, have developed a school-within-a-school for ninth graders (Cawelti, 1989) while some members of Sizer's Coalition of Essential Schools, such as Central Park East Secondary School in Harlem and Thayer Junior/Senior High School in Winchester, New Hampshire, have divided their students into houses and implemented an advisory period so that students could connect with the school (Wood, 1992). Another member of the Coalition of Essential Schools, Springdale High School in Arkansas, has developed a school-within-a-school consisting of an interdisciplinary team of teachers (Nickle, Flynt, Poynter, & Rees, Jr., 1990). The New York City Public High Schools implemented a house program for ninth graders in

1987-1988 with varying degrees of success (McGanney, 1989). In High Point, North Carolina, the interdisciplinary team organization is being extended from the ninth grade to the tenth grade (George, Stevenson, Thomason, & Beane, 1992). Other high schools who have reorganized into interdisciplinary teams in at least one grade level include Nevada Union High School in Grass Valley, California; Amityville Memorial High School in Amityville, New York; Catalina High School in Tucson, Arizona; American High School in Fremont, California; Edsel Ford High School in Dearborn, Michigan; Andrew High School in Tinley Park, Illinois; and Phoenix Union High School in Phoenix, Arizona (George et al., 1992). This number is constantly growing with Texas schools, such as McNeil High School in Round Rock (Veach, 1993) and Westbury High School in Houston (Johnson, 1993), joining the movement.

The models for many of these programs can be found in the organization of effective middle schools. Indeed, in 1988 Maeroff called for the implementation of a totally different philosophy of education in high schools with the cornerstone being smaller learning units such as those found in many middle schools. Middle schools across the nation have implemented the interdisciplinary team organization to varying degrees, finding that it affords a way to organize teachers and students into small communities for teaching and learning (Plodzik & George, 1989). As defined by Erb

and Doda (1989), "teams are generally comprised of from two to five teachers who represent diverse subject areas, but who share a common planning period to prepare for the teaching of a common set of students" (p. 7). Research suggests various reasons for the effectiveness of this concept.

> After observing team organization in over two dozen schools, Erb argued that team organization provides the means by which teachers can gain greater control of the teaching-learning environment. In this manner, teachers can more productively respond to diverse learner needs. (Erb & Doda, 1989, p. 10)

Erb and Doda (1989) attribute some of the success to team discussion and analysis of students' performances which deepen teachers' understandings and lead to continual diagnosis, modification, and evaluation. They also point out that because of planning instruction collaboratively, teachers can reinforce skills in several subject areas. Raywid (1993) gives evidence of the importance of making time for teachers to work together in a collaborative manner by referring to organizational research as well as teacher effectiveness research. Senge (1990) believes the interaction of members of a team is necessary "to go beyond any one individual's understanding . . . [and] gain insights that simply could not be achieved individually" (p. 241). Darling-Hammond (1993) says that "teachers should have opportunities to engage in peer coaching, team planning and teaching, and collaborative research that enables them to construct new means for inquiring into their practice"

(p. 759). In a national survey of middle school principals, MacIver (1990) discovered the following:

> The most commonly agreed-on benefits were that teachers received social support and understanding from other team members, that instruction was more effective because of increased integration and coordination across subjects and courses, that students' problems were recognized quickly and solved effectively, and that students identified with the team, developed team spirit, and improved both their work and their attitudes. (p. 461)

MacIver's data (1990) "supported the claim that a well-organized interdisciplinary team approach can strengthen a school's overall program for students" (p. 461). Arnold (1991) reports that studies by Damico et al. found that students in schools with teaming exhibited more positive interracial attitudes and behaviors, and a study by Nolke (1993) shows that interdisciplinary teaming has a significant effect on student self-esteem. Studies by Erb and Doda (1989) reveal that teachers who worked on teams "had closer collegial relations, more confidence in the ability and potential of students, and a greater sense of personal efficacy" (p. 21). Interviews of seventh grade students conducted by Powell (1993) also reveal strong support for the team concept. Individual examples of the effectiveness of the interdisciplinary team organization range from middle schools in Mesquite, Texas (Henrie, 1992) to junior high schools in Alberta, Canada (Sigurdson, 1982). A study by Walsh and Shay (1993) provides evidence that "the participative climate of the team structure is associated with

increased teacher job satisfaction and increased teacher and student sense of responsibility for meeting the goals of the school" (p. 59).

Despite the apparent success of the interdisciplinary team organization, George (1988) has expressed concern about its ability to withstand the power of the century-old method of organizing by subject. In order to implement this concept, schools must be willing to change their structure to fit their vision rather than change their vision to accommodate their structure (Wood, 1992). Also, there is a need for more research on the effects of interdisciplinary teaming, especially in regard to student achievement (MacIver & Epstein, 1993). As Wagner (1993) points out, many schools are seeking to improve through the implementation of innovative practices, "but whether adopting them produces fundamental changes in teaching and learning remains in question" (p. 695).

The studies which have been conducted have not yielded conclusive results at this time. Spillman (1993) concluded that while interdisciplinary teaming in a high school increased the frequency of parent contacts, it did not improve student attendance. In a case study of 25 at-risk high school students who were taught by an interdisciplinary team of teachers, Albert (1993) found that all but two of the students graduated on time. Hall (1993) discovered that seventh grade students assigned to an interdisciplinary team

demonstrated higher academic achievement than their counterparts working in the traditional departmentalized structure; however, the students exposed to the departmentalized structure had better attendance, and there was no significant difference in the behavior of the two groups. The implementation of the team concept for ninth grade students at Duluth High School in Georgia resulted in modest gains in academic achievement, attendance, and the reduction of disciplinary actions (Roquemore, Matthews, and Neuman, 1994). It is too early perhaps to evaluate the effects of such structural changes in American schools. Curran's work (1993) indicates that the changes which have occurred in some schools, such as more collaborative work patterns and curricular innovations, are threatened by the continued existence of traditional schedules and the lack of the teacher time necessary to implement such efforts. Sizer (1992) points out that "the kinds of changes that are absolutely demanded cannot be 'put in place' and then 'assessed' 18 months later" (p. 29). Indeed, in a five-year study of the Coalition of Essential Schools, Muncey and McQuillan (1993) declare:

> Our evidence suggests that even when there seems to be consensus that change is needed and even when dedicated and well-intentioned people are trying to bring it about, issues and problems--often unanticipated--arise that threaten and impede the change process almost from its inception. (p. 489)

Obviously, the size of a high school has tremendous implications for the organization of the school. Likewise, it has an effect upon the attitude of teachers and the development of collegial relations among faculty, a major theme in the literature of effective schools as well as that of innovations and school change. According to Lee, Bryk, and Smith (1993), "the centrality of collegiality to effective school operations is documented in research" (p. 222), and this is supported by Good and Brophy (1986). Yet, teachers, according to Goodlad (1984), "perceived their awareness of one another, communication, and mutual assistance not to be strong" (p. 188). Few schools give teachers time or opportunities to plan and work together in a collaborative manner although several researchers see common planning time as essential (Boyer, 1983; Bullough, 1988; George, et al., 1992; Goodlad, 1984; MacIver, 1990; Meichtry, 1990; Perrone, 1985; Raywid, 1993; Sizer, 1984; Texas Task Force on High School Education, 1992; Wood, 1992). Especially in large high schools teachers often find themselves working in isolation (Sizer, 1984) leading to the feelings of alienation noted by Lee, Bryk, and Smith (1993).

III. Relationships Among the Disciplines

Another aspect of the modern American high school which has received much study is the curriculum and especially the organization of it. Many researchers have debated the merits of teaching the separate disciplines versus using an

interdisciplinary approach. According to Beane (1992), the history of curriculum research supports an integrative curriculum. Glatthorn (1987) points out that the experimental high schools of the Eight Year Study used curricula that deemphasized the separate disciplines and produced students who were more successful academically. He also cites a study by Vars in 1978 which "concluded that interdisciplinary courses are as effective as separate subject courses in teaching basic skills" (Glatthorn, 1987, p. 50). Finally, he refers to the research on the open classroom which usually emphasizes an integrated curriculum, describing a review by Walberg that "concluded that students in open classes did slightly or no worse in standardized achievement and slightly to substantially better on several other important outcomes, such as creativity, curiosity, and attitudes towards school" (Glatthorn, 1987, p. 50).

According to Vars (1991), since 1942:

> More than 80 normative or comparative studies have been carried out on the effectiveness of integrative programs. In nearly every instance, students in various types of integrative/interdisciplinary programs have performed as well or better on standardized achievement tests than students enrolled in the usual separate subjects. (p. 15)

Healy (1992) says that interdisciplinary instruction is "a concept worth pursuing, since we know that we learn more efficiently when connections among content areas are made"

(p. 13), and Cox (1993) shows that students' perceptions of how their courses relate can be significantly increased through the use of interdisciplinary units.

Glatthorn (1987) is not advocating a total abandonment of the separate disciplines but rather a balance between integrated studies and focused attention to the separate disciplines. Jacobs (1989) also calls for students to have "a range of curriculum experiences that reflects both a discipline-field and an interdisciplinary orientation" (p. 9) while Wagner (1993) says that "students need to develop a broad understanding of central concepts and the ability to integrate knowledge across traditional disciplines" (p. 699). Brophy and Alleman (1991) warn against the use of curriculum integration when it is not an effective means for reaching an educational goal. Vars (1991) also says that "the continuing challenge is to design curriculums that simultaneously take into account solid subject matter, the needs of the learner, and society's problems" (p. 15). Brandt (1991) reports that Jacobs sees "the biggest obstacle to interdisciplinary curriculum planning is that people try to do too much at once. What they need to look for are some, not all, natural overlaps between subjects" (p. 25).

Although few educators would dispute the need for judicious use of integrated curriculum, many find the emphasis in high schools today to be almost solely on

separate subjects. Bullough (1988) finds little integration of courses or knowledge which "creates a fragmented view of knowledge in which bits and pieces of content are presumably deposited into young people's heads for later retrieval" (p. 90). Boyer (1983) characterizes the current approach as the "compartmentalized view of curriculum. While we recognize the integrity of the disciplines, we also believe their current state of splendid isolation gives students a narrow and even skewed vision of both knowledge and the realities of the world" (p. 114). Sizer (1984) also describes the lack of a coherent relationship among subjects and views coverage within subjects as the priority in most high schools. "'Taking subjects' in a systematized, conveyor-belt way is what one does in high school" (p. 83). In a recent review of research, Lee, Bryk, and Smith (1993) point out:

> Bureaucratic organizational theory holds that staff specialization enhances a school system's efficiency in delivering its educational services. Whether benefits actually accrue to students from such specialization, however, is a complex question that has received little empirical scrutiny. (p. 215)

Some educators see a few signs of change in recent developments. Beane (1991) cites the whole language movement in elementary schools as a step toward an integrative curriculum there and says that "it may be that the recent calls for integration emerging from subject-area associations may eventually crack even the hard subject categories at the high school level" (p. 13). Some teachers are calling for

changes in the approach used. Whitmer (1990) states that "the content-driven curriculum is a dinosaur that is unaware of its responsibility to become extinct" (p. 68). Wood (1992) claims that in the most innovative schools, "material is covered in such a way that the subject matter areas, math, science, English, social studies, blend into one another which is the way the world works" (p. 177). Student feedback, gathered by Strubbe (1990), reveals that when teachers use interdisciplinary units, students feel more involved and that they have learned something. Ferrara (1993) finds that parents, students, and school staff believe that learning increases when subjects are related in a thematic way, and Schlais (1992) shows that students who participate in successfully integrated programs experience a sense of connectedness. Gardner (1989) believes that during the third seven-year period of life (15 to 21), "youths . . . are far more willing to transcend boundaries and to risk interdisciplinary thinking" (p. 161). As Jacobs (1989) says, "interdisciplinarity does not stress delineations but linkages. . . . It is a holistic approach with a tradition in Western thought that comes from Plato's ideal of unity as the highest good in all things" (p. 8). It addresses current dilemmas, such as the growth of knowledge, fragmented schedules, and irrelevancy of curriculum, and students who are involved in interdisciplinary studies will be better able to integrate strategies from their schoolwork into the

real world (Jacobs, 1989). As Boyer (1983) reminds his readers:

> To be prepared to live in our interdependent, interconnected, complex world, students must be well informed. They also must have the ability to bring together information from ideas across the disciplines, organize their thoughts, reach conclusions, and, in the end, use knowledge wisely. (p. 117)

IV. Relationships Between Teachers and Students

One of the major challenges faced by high school educators is to establish relationships with students so that they can communicate effectively and share ideas freely. Goodlad (1984) finds that parents and students expect schools to be nurturing, caring places where children are viewed as individuals as well as students but that "teachers want to teach and that the role they have in mind is a far cry from nurturing students in the personal and social nonacademic aspects of their lives in school" (p. 89). He describes "a decline from lower to upper grades in teachers' support of students as persons and learners and a . . . setting more conducive to casual than sustained student-teacher relationships" (p. 126). He points out that this decline in support systems occurs just when a strong support system is needed to maintain student involvement in school tasks (Goodlad, 1984). The importance of a relationship with an adult is also stressed by Lightfoot (1983) who claims that "the high school experience can be totally transformed by a vital relationship with a special adult"

(p. 355) and by Wagner (1993) who says that "adolescents need to feel part of a community in which they are known and cared for by responsible adults" (p. 700).

Wagner (1993) also finds that teachers are concerned about the increasing number of single-parent and dual-career families. They believe that adolescents are more emotionally "needy" than ever before and that "growing numbers of students feel completely disconnected from almost everything they are asked to do in classrooms" (p. 697). They "long for opportunities to talk to peers and to caring, nonjudgmental adults about pressures in their lives and related larger questions" (p. 699). Newmann (1981) says that "many efforts at school improvement . . . can be viewed as efforts to reduce student alienation; that is, to increase students' involvement, engagement, and integration in school" (p. 546).

Schools have sought to address the need for students and teachers to know each other as people in a variety of ways. It occurred naturally in the one-room schoolhouses of the 1800's. When systemwide high schools began to be built, homeroom periods were added to give teachers and students time to interact, but their purpose quickly eroded into a purely administrative one (Hertzog, 1992). The advisor-advisee program, implemented in many middle schools and a few high schools, is an attempt to ensure that all students will have at least one adult who knows them (Arnold, 1991).

> While no hard data exist as to the efficacy of A/A programs, Epstein and MacIver found that principals from schools with advisory programs report that their schools more successfully meet student needs for guidance, advice and counseling than do their counterparts in schools with conventional programs. (Arnold, 1991, p. 23)

Other programs are being developed, such as the structured group program in a high school in Connecticut which involves students and staff in a collaborative effort to address problems affecting students and their success in school (Phillips, T. & Phillips, P., 1992). Austin Independent School District in Texas has developed a course entitled Peer Assistance and Leadership to train students to help their peers and to make more responsible, informed decisions (Thomas, 1987).

> Newmann articulates an alternative role for teachers in response to concerns about student detachment and fragmentation of experiences. Under this role, staff would have broader responsibilities that extend beyond specific classroom duties and a correspondingly less limited focus on a particular subject area. This extended or diffuse adult role recognizes that schools seek to influence students' social and personal development, as well as their intellectual development. . . . Furthermore, this role concept is based on the premise that to attain these ends requires that a few adults maintain a continuous and sustained contact with students, and that they respond to the students as whole persons rather than as clients in need of a particular service. There is some ethnographic evidence that a more diffuse teacher role can also facilitate classroom instruction. (Lee, Bryk, & Smith, 1993, p. 216)

Perrone (1985) and Sizer (1984) both concur that high school students are trying to determine their social and ethical values and that they need time to think about themselves and others. As Sizer (1984) says, "this activity of discovery

is inevitable, and it can be either ignored . . . or confronted. . . . Useful and sensitive confrontation . . . can assist in the development of the student's character" (p. 85). Much of the literature (Bullough, 1988; Newmann, 1992; Texas Task Force on High School Education, 1992; Wood, 1992) emphasizes the establishment of communities of learning within high schools where both teachers and students grow as scholars and as persons through personalized contact over the long term. Creating these communities is especially difficult because "a breakdown in human commitment has resulted from the process of specialization and centralization that undergirds our system of mass education" (Lee, Bryk, & Smith, 1993, p. 227). Goldberg (1993) emphasizes, however, that one of the underlying beliefs of the Coalition of Essential Schools is that a teacher must know his/her students well to be able to teach them.

The structure, curriculum, and relationship between teachers and students in American high schools are, thus, the subject of both scrutiny and experimentation. In the midst of these reform efforts, it should be remembered that:

> The structure, dominant pedagogy, and disciplinary divisions of American secondary schools have remained relatively unchanged for nearly 100 years. Change of the scope and nature currently being undertaken . . . has no historical precedent. It would appear that many lessons—some of them sure to be painful--still need to be learned about achieving the ambitious aims of current reform efforts. (Muncey & McQuillan, 1993, p. 489)

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CHAPTER III

PROCEDURES

Procedures used in this study involved a quantitative and qualitative examination of the effects of Project SAIL (Student Achievement through Interdisciplinary Learning) upon the achievement, attendance, and attitude toward school of ninth grade students. The purpose of this chapter is to describe the procedures employed.

Population

The data for this study were collected from ninth grade students attending a high school located in a large suburban school district in North Central Texas during the 1993-1994 school year. Students who were enrolled in any Honors English I, Honors Algebra I, Special Education, English as a Second Language, and/or basic classes did not participate in the study, nor did students who were repeating the ninth grade. The eligibility of students for the study was determined by reviewing their individual class schedules. The experimental group consisted of students who had registered for English I, Algebra I, Biology I, and World History in the spring of 1993. They participated in Project SAIL because of their enrollment in these four courses. At the time of course selection, they did not know that the project

would be implemented. The control group included students who did not register for these four courses but who were enrolled in English I and/or Algebra I. Some of these students were taking Geometry, World Geography, or Physical Science, and some of them were not taking a social studies or science course. All of the students who were in the Algebra I control group were also in the English I control group. Six students were in the English I control group who were not in the Algebra I control group.

Initially, 107 students were identified for the experimental group, 62 students were identified for the English I control group, and 56 students were identified for the Algebra I control group. One hundred, sixty-nine students were administered the School Attitude Measure in September. By May the total population was reduced to 135. This represented a loss of 14 students from the experimental group, 20 students from the English I control group, and 20 students from the Algebra I control group. Four students in the experimental group were absent the day of the English I test, and 10 students were absent the day of the Algebra I test. Three students in the control group were absent the day of the English I test, and four students were absent the day of the Algebra I test. The study, therefore, was based on a total population of 135 students. Ninety-three students in the experimental group were tested for attendance and attitude, 89 for achievement in English I, and 83

for achievement in Algebra I. Forty-two students in the control group were tested for attendance and attitude, 39 for achievement in English I, and 32 for achievement in Algebra I.

Instruments

Instruments used in this study to collect statistical data included the following:

1) a teacher-developed, end-of-course English I test
2) a Texas Education Agency-developed, end-of-course Algebra I test
3) the School Attitude Measure (SAM)

The average daily attendance rates for ninth grade students as reported on the Public Education Information Management System (PEIMS) were also used.

English I teachers who taught students in the control group and the English I teacher who taught students in the experimental group created the English I test. It consisted of 100 objective questions that tested mastery of the English I essential elements. After the teachers developed the test, the district language arts coordinator reviewed the questions to ensure that they addressed the essential elements of the course, thereby establishing content validity. The Texas Education Agency developed the Algebra I test for use in all Texas schools to assess students' mastery of the Algebra I essential elements. Selected schools throughout the state administered the Algebra I

examination as a field test in May, 1993, and again in October, 1993. The Texas Education Agency staff used those results to validate and/or modify questions on the test.

The School Attitude Measure (SAM), developed by Dolan and Enos (1980), is a self-report survey instrument designed to evaluate students' affective responses to their school experiences. Its present form has "undergone a series of revisions ranging from the formation of a theoretical rationale and item specifications to the establishment of national norming standards" (Dolan & Enos, 1980, p. 7) in the fall of 1979. As a result of field testing and subsequent analyses, it has been determined that sexism and minority bias have been eliminated from the test items, that the reliability coefficient for internal consistency is .95 for the total test, and that there is "strong convergent validity of specific subscales with other instruments that test only one aspect of affective development" (p. 26).

Five levels of SAM were developed so that students could be tested appropriately in grades 1-12. Level K/L, designed for students in grades 9-12, consists of 100 statements to which students respond by indicating whether they "never agree," "sometimes agree," "usually agree," or "always agree." Some of these statements begin with a positive stem, and some begin with a negative stem. Approximately 35 minutes is necessary for students to complete the survey.

SAM provides information on five attitudinal scales:

1) motivation for schooling
2) academic self-concept/performance based
3) academic self-concept/reference based
4) student's sense of control over performance
5) student's instructional mastery.

Although individual students may vary in their development on these scales, group statistics generally reveal the five scales as dependent, and scores are consistent across them. Each scale is measured by 20 items.

A total score for SAM was given to reflect the student's attitude toward school as determined by the data from the five subscales. Raw scores were converted into normal curve equivalents (NCE's) so that they could be averaged. NCE's are almost identical to percentile ranks in the middle ranges but more moderate at the extremes.

An interview schedule was created for the purpose of obtaining data from the four teachers participating in Project SAIL. The questions were designed to make explicit the advantages and disadvantages of the interdisciplinary team from the teachers' perspective. They were open-ended in nature so that the teachers could express their ideas freely. Additional, probing questions were also used when needed for clarification or further elaboration. The researcher used this schedule to interview teachers at the beginning of the project, at the midpoint of the project,

and at the end of the project. A copy of the interview schedule used to question teachers can be found in Appendix A.

An interview schedule was also developed for use with ten students participating in the project who served as informed respondents. The questions were designed to elicit their reactions, either positive or negative, to being a part of the project and to determine whether they perceived any connections among the four courses. Again the questions were open-ended in nature with additional, probing questions used when needed to clarify a point or obtain more information. The students were interviewed at the end of the project. A copy of the interview schedule used to question students can be found in Appendix B.

Project Design

Concern about the high failure rate and low attendance rate of many freshman students motivated a group of high school teachers to search for causes and solutions. After examining successful middle school practices, such as academic teaming and the use of interdisciplinary units, they became convinced that similar procedures would be beneficial at the ninth grade level. Project SAIL resulted from their conviction that an interdisciplinary team of four teachers who shared a common group of students and a common planning period could make a positive difference in the achievement,

attendance, and attitude toward school of the students for whom they were responsible.

Students involved in Project SAIL were taught by the same four teachers in English I, Algebra I, Biology I, and World History as well as in a course entitled Peer Assistance and Leadership (PAL). Since all students attending this high school are enrolled in eight courses, these students took three other courses which varied. The schedule for all students is an alternating one with students attending four classes a day. Each class lasts 1 hour and 30 minutes.

The PAL course was scheduled during one period so that all four classes could meet together when necessary and teachers could group the students according to the activity planned or their needs. During this time the teachers focused upon the development of study skills and interpersonal skills as well as reinforcement of the thematic concept being emphasized in the academic classes. The period also provided time for peer tutoring, small group work, large group assemblies, service projects, and field trips. The use of time in this period was determined by the students' needs, and the teachers varied somewhat in their activities.

During the summer of 1993, the teachers received some training for the PAL course and worked together to develop an interdisciplinary approach to their subjects. They also

created a set of classroom procedures and guidelines that all four used. During the school year they shared a common planning period every other day that allowed them to design lesson plans that highlighted connections among the four subjects. For instance, they all taught a concept, such as sequencing, at the same time. In English I students constructed plot diagrams of stories read while in Algebra I they worked with number lines, in World History they developed time lines, and in Biology I they traced the development of a cell. The teachers also created instructional units centered around a theme, such as change, the environment, or conflict. Activities developed for the PAL course also focused on the theme to some extent.

In addition to this instructional focus, the teachers used their planning period to keep each other informed about students' progress or difficulties in the different classes. They contacted parents about concerns and accomplishments and held group conferences with parents and/or students when necessary. Students not involved in the project were taught by teachers working independently and were not enrolled in the PAL course.

Procedures for Collection of Data

Student achievement was measured by a posttest-only control group design. The end-of-course tests in English I and Algebra I were administered to the experimental group and the control group in May, 1994. Students had already

taken the Norm-Referenced Assessment Program for Texas (NAPT) in the spring of 1993. Their language and math scores on this test were obtained to use as the covariates. Student attitude toward school was measured through the use of a pretest-posttest control group design. SAM, the instrument used to measure attitude, was administered to students in the experimental group and the control group during the first six weeks of school as a pretest and again during the last six weeks of school as a posttest. The average daily attendance rates were taken from the PEIMS report for the 1993-1994 school year.

The four teachers participating in Project SAIL were interviewed three times during the school year. The first interview took place at the beginning of the year. Its purpose was to determine the teachers' expectations for the project and their plans for implementation. The second interview was conducted during the middle of the school year to assess the teachers' attitude toward the project at that time. The last interview occurred at the end of the year and gave the teachers an opportunity to reflect upon the project and to assess its strengths and weaknesses after the first year of implementation.

Ten students were also selected to serve as informed respondents. Students in each one of the four PAL classes were asked to nominate five students from their class to be interviewed. The four teachers then chose two of the

nominated students from each PAL class to be interviewed. From the remaining group of nominated students, the teachers selected two more students to be interviewed, thus making a total of 10 students. These students were interviewed individually in May, 1994, so that they could reflect upon their participation in Project SAIL during their freshman year. All of the interviews were conducted at the school in an empty classroom or a private office. They were audio-taped with a standard tape recorder that was in full view. Both teachers and students were assured of the confidentiality of their answers.

Procedures for Analysis of Data

Data obtained for the statistical analysis of Hypothesis 1 of this study were collected from 89 students in the experimental group and 39 students in the control group. Data used to analyze Hypothesis 2 were obtained from 83 students in the experimental group and 32 students in the control group. Data secured for the analyses of Hypothesis 3 and Hypothesis 4 were gathered from 93 students in the experimental group and 42 students in the control group. Hypothesis 1 was tested through an analysis of covariance to determine if a significant difference existed in the mean scores of the two groups on the English I achievement test. The posttest score on the English I test served as the dependent variable while the language score on the NAPT test was the covariate. Hypothesis 2 was also tested through an

analysis of covariance using the posttest score on the Algebra I achievement test as the dependent variable and the math score on the NAPT test as the covariate to determine if a significant difference existed in the mean scores of the two groups. The use of the analysis of covariance controlled statistically any initial differences in the students which might have been present and which might have confounded differences between the two groups (Huck, Cormier, & Bounds, 1974).

The data used for statistical analysis of Hypothesis 3 were the average daily attendance rates for students in the experimental group and the control group as recorded on the PEIMS report for the 1993-1994 school year. An independent samples t test was used to compare the two group means and to determine if a significant difference existed.

The data used for statistical analysis of Hypothesis 4 were the mean normal curve equivalents on SAM for the experimental group and the control group. Analysis of covariance was used, and the posttest means were compared after having been adjusted for any differences between the two groups with respect to pretest means.

Data used to determine specific benefits and liabilities of interdisciplinary teaming were obtained from the teacher interviews which were audiotaped and transcribed to written format before the content was analyzed. The first set of teacher interviews was analyzed at the beginning of

the year, the second set during the middle of the year, and the third set at the end of the year. Guidelines outlined by Bogdan and Biklen (1992) were used to analyze the data. They define data analysis in qualitative research as follows:

> Data analysis is the process of systematically searching and arranging the interview transcripts . . . to increase your own understanding of them and to enable you to present what you have discovered to others. Analysis involves working with data, organizing them, breaking them into manageable units, synthesizing them, searching for patterns, discovering what is important and what is to be learned, and deciding what you will tell others. (p. 153)

The first step in the analysis of the content consisted of reading each transcript several times to form a holistic impression. Key words and repetitive phrases and ideas were highlighted, an initial list of categories was developed, and each category was coded with a number. Each unit of data in the transcripts was then coded to correspond with the appropriate category. If a response contained more than one idea, it was divided and coded so that each unit reflected a single idea. If a unit of data belonged in more than one category, it was coded and placed in all appropriate categories. The transcripts were then cut into sections, and each unit of data placed in a folder that corresponded to a particular category. A description was then developed of the specific benefits and liabilities of interdisciplinary teaming.

The procedure described above was also used to analyze data collected from the student interviews. The interviews were audiotaped, transcribed to written format, and studied to determine major categories which were then coded. Each unit of data was coded according to the appropriate category and placed into a corresponding folder. A description was then created of any connections among the subjects as perceived by students along with any advantages or disadvantages that resulted from the interdisciplinary teaming and the PAL course.

Summary

Subjects for this study were 135 ninth grade students in a high school in a large suburban school district in North Central Texas. The students were divided into an experimental group and a control group based upon their enrollment in certain courses. Students in the experimental group had registered for English I, Algebra I, Biology I, and World History while students in the control group were not taking all of these courses. Students in the experimental group were taught by the same four teachers in these courses as well as in an additional course called PAL. These teachers shared a common planning period as well as this common group of students.

Hypothesis 1 and Hypothesis 2 were tested by a comparison of the students' performances on achievement tests in English I and Algebra I through an analysis of covariance,

and Hypothesis 3 was tested by a comparison of the attendance of students in the two groups through an independent samples t test. SAM was also administered to students in the two groups at the beginning of the year and at the end of the year to test Hypothesis 4. Analysis of covariance was used to determine if a significant difference existed.

The four teachers who implemented Project SAIL were interviewed at the beginning of the year, during the middle of the year, and at the end of the year. Ten students participating in the project were also interviewed at the end of the year. Qualitative procedures were employed to analyze the interview transcripts.

Chapter References

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CHAPTER IV

ANALYSIS OF DATA

The general purpose of this study was to determine the effects of participation in an interdisciplinary program called Project SAIL upon the achievement, attendance, and attitude toward school of ninth grade students. This chapter contains statistical and descriptive analyses of those effects. The first section of this chapter is an analysis of the four hypotheses stated in Chapter I. The second section is a detailed description of the specific benefits and liabilities of interdisciplinary teaming from the perspective of the teachers along with the reaction of students to their participation in the program. Section two is divided into four parts. The first part describes the teachers' expectations for the project at the beginning of the year. The next part chronicles their perception of the project during the middle of the year, and the third part gives their assessment of the project at the end of the year. The fourth part provides the reaction of students to their participation in the project.

Major Quantitative Findings

Hypothesis One

The null hypothesis that there would be no significant difference in mean scores obtained from the teacher-developed, end-of-course English I test between ninth grade students who participated in Project SAIL and ninth grade students who did not participate in the program was tested by an analysis of covariance. Table 1 gives descriptive data concerning the size of the two groups being tested, their actual means, their standard deviations, and their adjusted means.

Table 1

Means and Standard Deviation for Achievement in English

Groups	N	Actual Mean	Standard Deviation	Adjusted Mean
Experimental	89	64.31	10.45	64.49
Control	39	65.56	11.44	65.17

Table 2 displays the results of the analysis of covariance using students' scores on the Norm-Referenced Assessment Program for Texas (NAPT) as the covariate and their scores on the teacher-developed, end-of-course English test as the dependent variable.

The hypothesis was tested at the .05 probability level. The value for F is 0.15. Therefore, the data do not support rejection of the null hypothesis.

An examination of the actual and adjusted means and standard deviations as well as the statistical analysis reveals no significant difference between the two groups.

Table 2

Summary Table for Analysis of Covariance: Comparison of Groups on English Exam

Source	df	Mean Squares	F	Two-Tail Prob.
Between Groups	1	12.48	0.15	0.70
Within Groups	125	82.29		

Hypothesis Two

The null hypothesis that there would be no significant difference in mean scores obtained from the Texas Education Agency-developed, end-of-course Algebra I test between ninth grade students who participated in Project SAIL and those who did not participate in the project was also tested by an analysis of covariance. Table 3 gives data for the two groups tested, including their size, their actual and adjusted means, and their standard deviations. These data reveal that both the actual mean and the adjusted mean of the experimental group are higher than the comparable means of the control group.

Table 3

Means and Standard Deviation for Achievement in Algebra

Groups	N	Actual Mean	Standard Deviation	Adjusted Mean
Experimental	83	66.28	15.13	65.99
Control	32	59.37	18.36	60.12

Table 4 reveals the results of the analysis of covariance. Again, NAPT scores were used as the covariate and scores on the Algebra I test as the dependent variable.

Table 4

Summary Table of Analysis of Covariance: Comparison of Groups on Algebra Exam

Source	df	Mean Squares	F	Two-Tail Prob.
Between Groups	1	790.45	3.35	0.07
Within Groups	112	235.68		

This hypothesis was tested at the .05 level of probability, and F is 3.35. The null hypothesis, therefore, cannot be rejected on the basis of the data. It should be noted, however, that the results are significant at the .07 level of probability. Although there is a noticeable difference between both the actual means and the adjusted means, the analysis of covariance fails to reveal a

difference of statistical significance between the two groups at the .05 level of probability.

Hypothesis Three

The null hypothesis that there would be no significant difference in the average daily attendance rates between ninth grade students who participated in Project SAIL and those students who did not participate was tested by an independent samples *t* test. Table 5 displays the results of this statistical analysis.

Table 5

Summary Table for Attendance

Method	M	SD	df	t	t Critical	P
Experimental	168.70	6.34				
Control	168.86	6.35	133	-0.13	1.98	0.89

The calculated value of *t* is less than the critical value of *t*. Therefore, the results are not significant at the .05 probability level.

Table 6 gives more descriptive data concerning the attendance of the two groups. It shows the number in each group, the mean, median, and mode, and the minimum number of days and maximum number of days students were in attendance. The descriptive data reflect the almost identical attendance

rates of the two groups. They reveal virtually no difference.

Table 6

Descriptive Data on the Attendance of the Two Groups

Groups	N	Mean	Median	Mode	Minimum	Maximum
Experimental	93	168.70	171	173	147	175
Control	42	168.86	169.5	174	145	175

Hypothesis Four

The null hypothesis that there would be no significant difference in mean scores obtained from the School Attitude Measure between ninth grade students who participated in Project SAIL and those ninth grade students who did not participate in the project was tested by an analysis of covariance. Data describing the two groups can be found in Table 7. Included in this table are the size of the two groups, their actual means, their standard deviations, and their adjusted means.

Table 7

Means and Standards Deviation for Attitude Toward School

Groups	N	Actual Mean	Standard Deviation	Adjusted Mean
Experimental	93	43.23	22.56	44.05
Control	42	46.33	23.17	44.51

There was little difference between the actual means and virtually no difference between the adjusted means.

The students were given the School Attitude Measure during the first six weeks of school, and the score on this pretest served as the covariate. They took the survey again during the last six weeks of school, and this posttest score functioned as the dependent variable. Table 8 reflects the results of the analysis of covariance using these scores.

Table 8

Summary Table for Analysis of Covariance: Comparison of Groups on Attitude Measure

Sources	df	Mean Squares	F	Two-Tail Prob.
Between Groups	1	5.92	0.02	0.88
Within Groups	132	257.72		

This hypothesis was tested at the .05 probability level, and F equalled 0.02. The data, therefore, fail to reject the null hypothesis.

Major Qualitative Findings

In addition to determining if participation in Project SAIL made a statistical difference in students' achievement, attendance, or attitude, this study had another purpose. The second goal was to describe the specific benefits and liabilities of interdisciplinary teaming from the teachers'

perspective and to describe the students' reactions to the project. This section contains the findings gleaned from teacher interviews conducted at the beginning of the year, the middle of the year, and the end of the year as well as from student interviews held at the end of the year. Each one of the four sets of interviews is described separately.

Expectations at the Beginning of the Year

This section deals with the four teachers' expectations for Project SAIL at the beginning of the year. They discussed the project in terms of its anticipated positive and negative effects upon the students and upon themselves and also focused on the PAL class, its most distinctive feature.

Support System for Students

When asked in what ways they believed the interdisciplinary team structure would benefit students, the teachers focused to a large extent upon the creation of a support system for the students. They described a "support group for these kids" in terms of the students' relationships with each other and the teachers as well as the assistance to be offered by the teachers themselves. From the beginning, they viewed "the bonding with other students and the teachers" as a priority that would have a positive benefit upon the students. Their comments give evidence of this belief.

I want them to bond, first of all, with each other.

> We want to help them get to know each other better.
>
> They have a common group of kids who they are with. Working together, they can help each other.
>
> I want them to feel a camaraderie as we do our different activities.
>
> I have time to get close to them myself.
>
> It's kind of a home base for these kids that they need really badly in this building.
>
> It will help those students to know that they can come to me if they have a problem in school.

The teachers also felt that the students would receive support from "the follow-up program" that would result from their working together. They would share information about the students' progress in the four classes and work together not to let any student falter. The students would know that the teachers were "not going to let you [students] fail if at all possible," and the teachers would have "a better focus on what the overall student is doing" and "a fuller understanding of my students." All of the teachers referred to this monitoring aspect of the project in terms of the students' academic progress.

> If all of the teachers know what assignments are due, they can be on the students to be sure they get everything done, not only in their class but also in the other classes.
>
> All four teachers will know if they're having trouble in one subject and will help them.
>
> I will know from the other classes how they are doing and not just how they are doing in math.
>
> I know where they came from when they come to my room and where they are going when they leave my room.

The teachers also expressed the opinion that they would be able to check on the students' attendance more easily.

> Attendance should be better because we can get on those kids immediately instead of waiting to figure out that they are skipping.
>
> The first time they are tardy or absent, there are four teachers who know about it immediately that day, and they contact them so you have a follow-up program that is just superb.
>
> We're hoping that we can start recognizing attendance patterns and tardies before they become a problem.

The teachers believed that this monitoring would have a positive effect as evidenced by the following comment: "The student knows not only that somebody is checking up on them but that somebody cares."

Finally, the teachers believed that the fact that "there are no upper classmen in there to set some strange attitude" would be beneficial. They thought "one age level and maturity level will be better."

Cognitive Benefits for Students

In responding to the question about the ways in which students would benefit from interdisciplinary teaming, teachers also described cognitive benefits. They told how "every major concept is carried through all of the disciplines" and that the students were "going to start to see their world in an interdisciplinary way" as they became aware of "the inner connections among the different subjects." The teachers believed that they would be able to "help them make those mental leaps they were expected to do

on their own in the past." As one teacher said, "By being able to work closely with the English teacher when I'm teaching proofs, I can show them that the logic they use in writing proofs is the same logic they use in writing a paragraph."

The teachers also felt that this interdisciplinary approach would increase the students' retention of the content and that they would "transfer learning from one content area to the other." One teacher described the process in the following manner:

> Learning in isolation usually doesn't help them [students] as far as retention is concerned so if they have to discuss it in detail in one class, mention and relate it to something else in another class, then they can pull it all together.

Teachers were beginning to see some evidence of this occurring as indicated by the following comment: "When we start doing something, it is not new to them, and their attitude is great. They'll say, 'We're doing this in such and such class.'" The students were beginning to realize that they were "responsible for what they learned in this class in all of the others. In the past students thought that once they left that door, they were through, but now we [teachers] will be pulling back and forth between our subjects."

The teachers also pointed out that the students appeared more motivated to learn because they were "giving them relevance for these things." One teacher said, "I have had fewer questions this year about is this like the real

world and when am I going to need this." Teachers attributed this to "high interest material in the classroom" and the fact that "we're trying innovative approaches. We're doing things that we've never done before. We're getting away from the lecture at least to a large degree." Their assessment of students' reaction to this approach is revealed in the following comments: "It's exciting to them [students]." "The classes are just more fun." "The interest is the big plus." "They want to be here because of the interest level."

The teachers also believed that using the same set of class rules and procedures would allow them to spend more time on instruction and "less time on administrative type things." By doing "the same things systematically, such as taking up papers, late work, class rules with some flexibility, of course, for the subjects," they did not "have to remind the students as much because they know what is expected in more than one class." Not only did the teachers spend "less time explaining what is expected of them [students]," but also the students could not "say that I [teacher] am being different."

Adjustment to High School

Easing the adjustment to high school would be a major benefit of the interdisciplinary team according to the teachers. They expressed this view in the following comments:

> They will get a better view of the school than the other freshmen.
>
> It is an opportunity for us to get these kids involved in school and just take them out, let them see things, meet people, and do things.
>
> We want to show them different areas so that the school becomes theirs.
>
> They will take ownership.

Attitude of Students

The teachers also expected to see the students develop positive attitudes that would benefit them throughout their lives. They felt that "self-esteem has got to come up" and that the students would acquire "a spirit of cooperation along with an independence and a self-assurance, confidence that what they have to say is important." They pointed out that being part of a team would lead to "a more polite respect and regard for one another" and the "knowledge that there are times for different types of behavior, such as joking around, and that there are acceptable ways to joke around."

Concerns about the Students

Three concerns surfaced when the teachers were asked what problems the interdisciplinary team structure might cause the students. The first one dealt with the teachers' fear that they might be "catering to them [students] too much." One teacher said, "There is danger maybe that we could coddle them and then not have them ready to become

independent next year." Another teacher was less worried, however, saying, "They may be more sheltered now, but the goal is for them to be more independent in the end."

Teachers also expressed concern that the students might "feel like they are isolated in this." One mentioned that "the first day some of the students complained about being in this group. They asked if they had done something wrong to get in this class."

Finally, one of the teachers said that they would "have to guard against overkill." Another said that they would "have to watch not overemphasizing the connections."

Support System for Teachers

In answering the question of how the interdisciplinary team structure would benefit them as a teacher, all of the teachers referred to having their "own support group." As one teacher said, "I was isolated in my own little room, but now the group's there and they're interested." Other comments included "it is almost like a security blanket," "we feed off each other a lot," "we're all in this together," and "it is fun to work with somebody." The teachers pointed out the importance of interaction with other adults in the following statements:

> I get to interact with three other adults, and I am not spending my entire time with fourteen and fifteen-year-olds. Consequently, I don't go home feeling like a fourteen or fifteen-year-old.

> I've got the benefit of three other professionals' opinions of what is going on in my class who are interested and are involved in what I am doing daily.
>
> We've gotten acquainted, and we understand each other's personalities. We know how we feel about different things, and we've gotten an idea of what to expect in each other's class.

Professional Growth of Teachers

The teachers also saw their own professional growth as a benefit of the interdisciplinary team structure. They found that they could "be more effective" and were "seeing more of the connections." Specific examples were given in the following statements:

> It is exciting just to be able to work with history and English. I've worked with science before, but to be able to coordinate and to find applications in history and English, I find to be a good challenge.
>
> I didn't realize some of the things going on in algebra were related to what I was doing in biology.
>
> I am actually learning more about history since I haven't studied that since I was in college.

The teachers also discovered that they could gain new ideas for teaching their own subjects as a result of their discussions. "The people with the best ideas for a particular content area are not the people teaching that content area. They see possibilities outside the norm and have not sunk themselves into a rut yet."

Attitude of Teachers

The attitude of the four teachers in this initial set of interviews was very positive. They felt that they were

"starting something new" and that "given the structure we are giving these kids, there is no reason why they shouldn't really be successful." They expressed this optimistic spirit in a variety of ways. "I don't perceive any negative attitude right now." "I am starting out in a positive frame of mind." "We're going to make this work." "And the whole idea is so positive."

Autonomy of Teachers

When asked what problems they thought they might encounter as a teacher because of the interdisciplinary team structure, the teachers mentioned the loss of some autonomy. They realized that they were no longer independent but now "responsible to the other team teachers" as revealed in these comments.

> It is where I have to check with someone else, and that is going to be a change.
>
> I have to check with them [teachers] to see if it will go along with what they are doing.
>
> I'm the kind who likes to have the lesson plans done up for a six weeks, and I know what is going to be in each unit throughout the year. Now I'm having to hold back. I have to know what the group is doing, what the theme is going to be for the next six weeks.
>
> With this team structure, I need to be aware of what the other teachers are planning, and they need to be aware of what I am planning.
>
> I can't plan very far in advance.
>
> Now occasionally you are going to be doing something when you really wish you could have done something a little different.

> I have to lay aside the things I've always thought or done and try new things.

Despite the realization that teaming meant the loss of total independence and the creation of an interdependent state, the teachers were willing to become a member of the team as evidenced by their statements.

> I never felt that I had to give up something that would make me not want to teach with this group.

> You sacrifice the total omnipotent control of your classroom. You have got to see the control you are getting in other places to appreciate that that loss isn't that big a deal.

Time to Work as a Team

In discussing possible problems that might be caused by the team structure, the teachers mentioned time but were unsure whether they would find it to be a problem. One pointed out that "block scheduling facilitates this real well" and that "the hour and a half is a nice length for a conference period." Some of the teachers felt that the common planning period every other day would be adequate.

> We have got that one hour and a half we can get together and do some hard planning, and then the next day we've got our separate planning time to take care of the things we need to take care of. For the moment that works okay.

> Because they were able to give us a conference period off together, I think we will be able to do a lot of that management during that time.

> I think having that hour and a half period every other day and knowing that that is our time will be helpful. I don't think we could do this without that.

Others voiced concern that the allotted time would not be adequate.

> We will need two or three planning periods a week. That means less time to do our work.
>
> We also still need time to do our individual tasks, and we are involved in other aspects of the school.
>
> We will need to think through the theme topic each time. Getting them far enough in advance takes so much planning. I think that's the thing that concerns me the most.
>
> I think it will take a lot more time.
>
> Time is the only problem I think I will have.

Participation in an Experimental Project

Another problem mentioned by the teachers involved the experimental nature of the project. As one teacher said, "It is a liability that the nature of this project is such that this is a prototype." "It involves a little risk-taking." Another pointed out that "right now we're just getting connected and we're still learning the process." At the same time, they felt that they had "an obligation to sell this thing at all sorts of levels."

Expectations for the PAL Class

When asked what effect they expected the PAL class to have on students, the teachers had varying answers. One reported a "plan to have them [students] work in groups and tutor each other" while others focused on it as a time to ask questions.

> It will be a time for them to learn to ask questions and become good listeners and good teachers.
>
> It allows them to ask questions that there is not time for in the regular class because you do get rushed.

Another purpose that was disclosed was "to address the affective ninth grader." As one teacher said, "It allows me to give extra attention to a small group of kids." Another saw the class as "an excellent time to check up on every one of those students."

The PAL class was also seen as a time "to do some direct instruction and learning strategies using the material from class so that we [teachers] can do some relevant instruction in a situation where we have time to do it." This period would be a "time to reflect" on the material covered during the regular class periods.

Although the intended effect of the PAL class was not clearly defined, some of the teachers expressed optimism that it would be beneficial to the students.

> I was thinking today once I get them in here and we are going, this will probably be the most valuable time that they have in their schedule because this is the one thing they are getting--the one tangible thing that they are getting--the other kids aren't.
>
> I think there are so many avenues we can go, things you always wanted to do in your teaching, but you couldn't because you had so many essential elements that had to be covered in the classroom. Now we have an opportunity to do that.
>
> It's got to work. On paper it just looks so good.

Concerns about the PAL Class

The question of what concerns they had about teaching the PAL class elicited many responses. The teachers admitted that the PAL class was "kind of up in the air right now" and that it was "the one class I am the most unsure about." Their concerns fell into three categories.

First, the teachers could not verbalize a definite purpose for the PAL class and expressed the fear that one might not develop as indicated by the following comments:

> I am not looking at a focused content area, and I think the test will be if we can keep them [students] focused and working toward something in a general concept.
>
> My concern is that it's not going to find its niche and we are just going to stumble from one thing on to the next as we go along and the purpose of that class is never going to become really clear.
>
> If we can identify those needs and then focus on them, then we have met our goal, but if we are still floundering, looking to see what is important with these kids in November, then we missed the ball.
>
> Their [students'] first impression is that it will be a Study Skills course, and we're trying to show them that it will be more than that.
>
> It is really open.
>
> I think they [students] think they are just having fun.

The teachers' second concern centered around the unstructured nature of the PAL class and the lack of control that might result. They revealed this uneasiness in the statements below.

> Even though I try to give it [PAL] structure, it is more free, and we do so many fun activities that I am not sure they [students] know they are learning.

> I am afraid that attitude will carry over to my Biology I class where I want them to be more serious.
>
> We'll be working with group dynamics, and you never know what dynamics will do.
>
> I don't think I will have as much control over that situation as I do in a regular classroom.

Finally, the teachers indicated that they did not feel "prepared to go in and do what we're doing regardless of what it is at this point." One teacher said that she did not "feel really trained to teach it" while another said that "not having taught it before is a concern along with keeping a focus." Lack of confidence about what to do was indicated in remarks such as this one: "I think how do I want to approach this class, and it's really tentative for me." The affective nature of the PAL class drew the following comments from one teacher: "It's a lot more 'touchy, feely' class than it is anything. I hate teaching classes like that because it takes me a long time before I really get comfortable with the class."

Perceptions During the Middle of the Year

The four teachers were interviewed again during the middle of the year to determine their perceptions of Project SAIL while they were engaged in implementing it. Although most of their observations fell within the same categories established during the initial set of interviews, three of the earlier topics were not mentioned at all, and five new ones emerged. Teachers no longer commented upon the

adjustment of students to high school, the attitude of students, or the autonomy of teachers. Instead, they talked about teaching teamwork by modeling it, the effects of the project on student behavior, unresponsive students, the dynamics of the teaching team, and the implications for parent involvement.

Support System for Students

The teachers continued to regard the creation of a support system for students as one of the greatest benefits of Project SAIL. They reported that the support system they had envisioned at the beginning of the project had actually begun to develop. They observed that the students "definitely have a sense of belonging which has turned out pretty good," that "with the teaming some students are finding a home when they come to school," and that "they have a support group here that they wouldn't have without it [Project SAIL].

The teachers gave numerous examples of the positive bonding that had occurred among the students. They described how "it is different in the classroom because they all know each other. In most classrooms they don't even know each other's names after sitting there for a year." One teacher described an incident in which "a girl came in crying the other day, and they were all very concerned about her. In a normal classroom that concern would not have been there." Furthermore, "they do things together. It is not

just in class. You see them together outside of class." A teacher related the following account to demonstrate the closeness of the students:

> About a month ago I was going through the cafeteria, and I got in there later than I usually do so all of the students were already sitting down. I noticed ours were all at one table. That was the only table that was not a couple of people and an empty space and a couple of people and an empty space.

Another teacher commented that seeing them together in the lunchroom provided "a good example of how they are unified" while someone else pointed out that she had "seen them socializing together a lot in the hallway" and that "you can tell even that some of them are dating." Other responses included "they care about each other a lot more than in other situations," "they relate to each other," and "they are a group."

The teachers also felt that they knew these students much better than they had known their students in the past, and they viewed this closer relationship as positive. As one teacher said, "I feel a part of them, and I think they feel a part of us." The teachers felt that they spent more time with the students as evidenced by the comment, "I have students coming in every day and not just at regular tutorial times," and that the students talked more freely with them. Several responses indicated that communication between teachers and students was frequent and comprehensive.

> They communicate a lot better. That was from the beginning of the school year. Usually it is about now, in the middle of the year, that you start to know some of the students.
>
> They feel they can come talk to me about different things.
>
> They come to me with good things too, and I think that is important.
>
> They are also more open in discussing problems, and they don't get to the critical point as much as they have in the past. Often you didn't know until they had gone over the edge that there was something wrong.
>
> This year I know my students and some of their problems outside of school a lot better than I have in the past.
>
> I feel more like a counselor this year than I ever have before.

The teachers also viewed their ability to monitor the students more closely as supportive. As one teacher put it, "I know what's going on, and I have things I can do about it." The teachers saw themselves as "kind of watching over them all day long," and they believed that the students were well aware of this. "They [students] understand that we're aware of what they have to contend with here." "They know that they have four teachers that are watching out for them and looking for them." One teacher explained that actually over one hundred people were there to help. "Because the kids know each other so well, I've got more than just the other teachers' eyes and ears in those other classrooms."

Clearly, the teachers believed that one of the major benefits of Project SAIL was the development of a support system for the students. They saw the students knowing and

caring for each other, and they viewed themselves as bonding with the students in a positive manner.

Cognitive Benefits for Students

All of the teachers expressed the belief that the interdisciplinary approach had been beneficial in helping students to learn. As one teacher said, "At the academic level of content, they [students] are starting to make the connections, and it is really exciting." They attributed this cognitive success partly to the fact that they "unloaded that sequential World History in November." As one teacher explained:

> One thing that got us off on the wrong track was the idea that this should be a World History-based curriculum. You have to stop and realize what the goal is, not to know World History but to increase their [students'] vocabulary, their problem-solving, and their understanding of basic geography.

The teachers agreed upon a unit on disease and medicine that "was interdisciplinary and got us all on the same page" and enabled them "to lose our attachment to the curriculum." Their success with similar units enabled them to conclude that their "best thematic and interdisciplinary instruction has been an asset" for the students and that "the flexibility that I have to pull things in in a different sequence because of the interdisciplinary approach is benefitting them [students]."

At the same time, the teachers acknowledged that they were just beginning to use the interdisciplinary approach

effectively. As one teacher indicated, "We've done it a couple of times which at this point in time in the year for a team that is on its first go is pretty good." Another one confessed that "sometimes interdisciplinary instruction gets to be hit and miss."

All of the teachers agreed, however, that the students were "looking for connections more than they did at the beginning" and that they were "starting to see more relationships among the classes" so that the teachers did not have to "bring them up nearly as much now." One teacher observed, "I don't have to tell them that this corresponds with what they are doing in their other classes. They are bringing that out now." Another expressed a similar idea in the following comment: "The kids are seeing connections and are able to move them across the board. That part is working really well." The teachers also gave some specific examples of the success of the interdisciplinary approach.

> I have never in my years of teaching Algebra had anybody come in and say, 'Oh, FOIL. We did that in Biology.' The fact that this group saw the connectedness of that tells me that they are starting to pay attention to what is going on across the curriculum.
>
> Success is that kid who walks in your room and you are about to start something new, and he says, 'Oh, I know this. I can do this.' Then he tells you about it. That is what happens when you are really hitting that interdisciplinary instruction just right.
>
> Not only are they connecting from here to the other courses, but also in Algebra they are starting to pull things together a lot faster.

> Students are making all of the connections themselves and elaborating on them. That is the litmus test of how well we're doing.

The teachers also felt that Project SAIL had increased students' interest and raised the level of their thinking. While noting that the students were "definitely more interested," the teachers also found that "they do work really hard" and that they were "coming up with examples on their own." One teacher illustrated this idea in the following way:

> They [students] are starting to ask some questions which are real interesting like 'What if this happens in the world? What happens in the other areas?' They are making it more global which I thought was interesting. You usually don't see that in a biology class very often and especially not from freshmen.

The math teacher also saw that the emphasis on relevancy was having a positive effect. "Now that they [students] see that there is some purpose behind it [Algebra I], they are paying more attention to it."

The teachers continued to express the belief that their "common policies on attendance, grades, tardies, and folders" preserved more of the time during class for instructional matters. One teacher said, "I don't have to constantly remind them of a rule I have that somebody else doesn't. That works out really well."

Teaching Teamwork by Modeling It

In responding to the question about how the interdisciplinary team was benefitting students, some of the

teachers mentioned an aspect they had not articulated in the earlier interviews. They discussed the fact that the students were seeing the four of them function as a team. "They [students] are noticing it because they are talking about it," leading one teacher to state that "the collaboration is apparent." As another one said, "They are getting to see four adults work together really well."

Effects on Student Behavior

Although student behavior was not a topic the teachers discussed in the initial set of interviews, they did express some opinions about it during the second round of interviews. Most of them thought that the project was having a positive effect on the behavior of the students although some concerns were also voiced. The fact that the four teachers were sharing information about the students led to the conclusion that students "have a tendency not to get in trouble as much because they know that if they skip class, they are going to get caught." This constant monitoring had some negative aspects also, however.

> The students' complaint is that if they do something in one class, they hear about it in other classes. We try not to deal with behavior in each other's classes unless it is a pattern of behavior, and then we see it really quickly and start trying to deal with it. Some of the students respond well to that, and others just feel it is another way of Mom being able to keep track of them.

> The problem may be the ones who are discipline problems find that they are constantly being corrected and we stay on their case quite a bit.

Some of the teachers also addressed the issue of the students' developing such a close relationship with each other.

> I see them wanting to talk a lot more and socialize a lot more, but I am not sure that is negative. They do settle down. It depends on what is going on.
>
> It also can be a little bit negative in that they are so free with each other and like to talk and chum around when they should be on task. I notice a little bit more of that.

The teachers' reaction to the effect of Project SAIL on the behavior of students was largely inconclusive at this time. They did not see, however, any major problems, and one even said that she had "seen their behavior be a little bit better."

Concerns about the Students

The teachers addressed two of the three concerns raised in the first set of interviews. Although they initially thought that students might be sheltered too much in the program, now they felt that they were "training them a lot better for next year." They were also no longer worried about the students' feeling isolated in the program.

> One of the concerns was that they would feel isolated. So many of them are involved in extracurricular things, and the scheduling was worked out so that they could do those things too.
>
> They still have friends outside of SAIL which is good. I don't want them to be a completely separate school.
>
> They have ownership, and they realize that they are doing something the rest of the school is not doing. They take pride in that.
>
> When they see that they have some advantages, they like the idea that they are in the program.

> I think probably 95% of them are glad they are in here. The ones who aren't want out because they think they would have it easier in PreAlgebra or something like that.

Unresponsive Students

In discussing what problems Project SAIL might be causing the students, the teachers all talked about the "core group of about ten or eleven who are consistently doing poorly on their grades." They were not sure that the project had caused these students' apparent failure. Indeed, one said, "We don't know what is wrong with Project SAIL, and it may not be Project SAIL. It may be school in general, but we haven't figured out how to reach those students." Although the teachers recognized that those students had some severe problems, they also believed that the four of them "should be able to deal with that a little better."

Support System for Teachers

In responding to the question of how the interdisciplinary team structure benefitted them as teachers, the teachers again stressed the importance of their working together as a group. Comments included the following ones: "I love the feeling that I am not isolated." "I am with the other teachers." "I no longer have to go it alone." They saw their interaction as beneficial because they were able "to get in contact with other departments and know what is

going on in other departments" and "to interact with adults every day which is better for one's mental health."

The teachers also felt that the fact that they were "working together on common problems as well as finding the solutions" was advantageous. One said that that had "been a big help dealing with troubled students" because she did not "feel like it is just me dealing with these students." Another teacher said, "I have enjoyed being able to go and talk to somebody else about these students and know that they are having the same problems with other classes or that they are not." The teachers emphasized the support they were receiving from the rest of the faculty and staff in statements such as the following two:

> I am continually amazed at the support we get from the rest of the faculty.
>
> I am excited about the response that we are getting from the other teachers. We are getting a lot of support from the rest of the school.

The teachers also felt that they were "getting to know the school a lot better" as they had to learn what was going on and who did what not only to share with their students but also to operate the program. This gave them more ownership and made them feel "more of an integral part of the school."

Dynamics of the Teaching Team

After working together for several months, the teachers believed that their harmonious interaction as a team was very beneficial to them. Although one teacher confessed,

"The dynamics of the group were a concern to me going into this," she quickly added, "That has not been a problem at all." They characterized themselves as a "really professional group," and one said, "I've been really pleased with the collaboration between myself and the other teachers." Another teacher offered the following explanation for the success of the team:

> I think the team was a good grouping to begin with because we had similar opinions and attitudes toward discipline and the grading policy, and that is still working. I think if we had come from different directions and were trying to meld that together, we would have more problems, but we were already in agreement beforehand. We were just lucky, I think, that we worked well together.

Responses from the teachers indicated that although they did not always agree, they were always able to work out a solution. "One thing this group does really well is compromise." "If something is wrong, it is wrong, and the team is professional enough not to take it personally." "No one hesitates to say that something is not working."

The teachers stressed that there had "never been a power struggle" among them and that they "worked well together as a team." As one teacher said, "Not one of us wants to be the head," and another observed, "I notice different ones leading out in different units." One concluded that she was "amazed at the working balance" among them.

Professional Growth of Teachers

As in the first set of interviews, the teachers saw their own professional growth as a benefit stemming from the interdisciplinary team structure. They saw themselves as having "a greater effect on the kids" as well as having "more control over these kids" because they were able to see "what other people were doing with these kids." They also felt that they were "much more global now." One teacher said, "I see things I can adapt and ways I can connect." Another mentioned "the insight that you gain from other subject areas, the overlapping, seeing it from a different perspective, and just the learning" while the math teacher said, "I am appreciating what the other teachers are doing in their courses and how it can apply to Algebra."

Attitude of Teachers

In discussing Project SAIL during the middle of the year, the teachers continued to exhibit a positive attitude saying that they found "it more interesting to teach," that "the content itself is much better," and that they could "be a lot more effective." At the same time they acknowledged that "the biggest problem we face is coming to terms with our own expectations right now." Although they realized that "the problem with this business is that failure is so apparent and success is so subtle," they "still wanted to see Broadway at the end of the period where they [students] are all singing and dancing at the same tempo and everything

looks good." Their awareness that their expectations were high and that they should not allow themselves to become frustrated was evidenced in several comments.

> The danger is beating ourselves over the head instead of just saying, 'This is where we are, this is what we know, and this is what we can do.'
>
> We have just got to do the best we can with this and not overprogram ourselves that there will be fireworks going off here every day.
>
> If there is anything I am disappointed with, it is wondering if there is something else I can be doing to make it that much better.
>
> I can't get past my high expectations.
>
> You see what you could have done.

Although they voiced their frustration at not immediately achieving spectacular results, the teachers were all committed to Project SAIL and glad that they were involved in it. Their responses reflected this positive attitude.

> If someone asked me, 'Do you want to do it this way, or do you want to go back to teaching on your own?,' there would be no choice. I would do it this way.
>
> The benefits have been tremendous.
>
> Working with the other teachers has brought me more enjoyment than I've had in the past couple of years.
>
> I would encourage anybody who is willing to work with a team, and that is the key, to be willing to work with a team, to do this.

Perhaps their optimism was best captured in the following statements: "I am looking forward to trying it again." "I think it is worth continuing, and it will be so much better." "We have some of the best plans in the world for next year."

Time to Work as a Team

At the beginning of the year, the teachers voiced their uncertainty about whether the conference period every other day would be enough time for them to work together. By the middle of the year, they were certain that "lack of time was a big problem." Comments ranged from "we don't have enough time to do what we want to do" to "my main problem is time, getting time to be able to work with the other teachers and coordinate our program." They discovered not only that "the one period every other day was not enough to cover everything" they needed to cover but also that "when you know you just have an hour and a half and that the bell is going to ring and you're going to have to rush to class, that cuts off discussion." Realizing that they needed "a larger block of time and more open-ended time," they began to meet after school, finding that after school they could "brainstorm more easily." One teacher described it in the following manner:

> We discovered the difference between quality and quantity of time. We could do the interdisciplinary work during the period every other day, but what we needed was an afternoon too. We had enough time during the period, but we had the knowledge that the bell was going to ring at any minute. Without that bell looming in the distance, we were probably four times as creative. We can come up with stuff after school that we could never imagine in that conference period.

Their solution to meet after school in addition to their conference period was not without drawbacks as one teacher pointed out. "Meeting after school is a problem because we

all have different schedules and responsibilities." Although all of the teachers felt that they lacked enough time "to do the teaming and the coordinating of the curriculum," they were not ready to give up on the project. As one teacher said, "I am getting to work with other people outside of my subject. That takes care of the fact that I don't have any time."

Participation in an Experimental Project

By the middle of the year, the teachers had realized that the experimental nature of Project SAIL posed its own set of problems for them. To begin with, they felt that they had "tried to take on too much at once. It was a really ambitious plan." One teacher described the plan as follows:

> We were supposed to set up an interdisciplinary team, we were supposed to organize the PAL class, we were supposed to set up a model curriculum that other teams could use, and we were supposed to be able to explain all of this to them. We may have overprogrammed a little bit.

The teachers concluded that "a lot of the instruction this first year is going to be hit and miss" as they worked together for the first time. One teacher reported that "now we see ways we can connect that we didn't think of as we were going through it." They also found that they had "problems relating ideas, finding materials, and pulling it all together." They felt that their emphasis on instruction might have caused them to neglect other aspects of the

program at times. One teacher reflected, "We got so buried in instruction for awhile that we didn't come up for air."

Finally, the teachers were being scrutinized by other educators interested in the project. This became a problem as the year progressed as seen in the following account: "The observation by others has been tremendous. It is almost weekly that someone from somewhere is walking in, and after awhile it does get old. It is a distraction when I am teaching."

Positive Aspects of the PAL Class

At the beginning of the year, the purpose and usefulness of the PAL class were question marks in the minds of the teachers. Halfway through the year, those questions had still not been resolved although one teacher reported that "it does seem to work sometimes, but it is not as effective as we wanted it to be." Another said that "it is all right," and that the "students like it." The teachers did describe several activities taking place during the PAL class that they believed were beneficial.

> We also have been doing more with logic games. We use games that cause them to think about what they are doing and not just mindlessly play.
>
> PAL has given me opportunities to work with the social skills in cooperative learning that I don't really have time for in my English class.
>
> We do move the kids around for tutorials from time to time, and we do have guest speakers from time to time.

> It has been a good alternative to a Study Skills class. We have done some things that relate to what we are doing instructionally.
>
> We have a notebook we collect during that period and grade it for all of their course work.
>
> They use the time to make up tests and quizzes that they haven't been able to do before or after school.
>
> I think that using some goal setting in general has been really effective this six weeks.
>
> They think of it as their study time, and they use it effectively.

The teachers concluded that "treating the PAL class partly as a study hall and then doing some peer relationship type things" worked "a lot better than trying to do just peer relationships." They felt that the students had "not suffered for being in that class," and if the other option were a Study Skills class, they had "come out way ahead."

Concerns about the PAL Class

The question of what concerns they had about the PAL class brought forth a flood of responses from the teachers ranging from "I am not really happy with the PAL class" to "I don't like the PAL class, and I don't think it works. It is great in theory, but it is not working." The lack of purpose for the class that had troubled them at the beginning of the year was still a problem as revealed in the following comments:

> The stretch for us is to think outside our discipline and to use the time productively.
>
> You just have a blank period to fill up with something relevant.

> We're having to feel our way through it.
>
> We don't have a definite format for it. That is difficult.
>
> The thing that scares teachers is that you have the kids for an hour and a half, and you are not teaching your subject.
>
> It turned into a little nightmare for awhile. There was a period that no matter what we did, it wasn't addressing their [students'] needs.

The fact that "there were no guidelines" for the class left the teachers feeling that they were "just trying to plug away at it."

In addition to their concern about the lack of a purpose for the class, the teachers talked about their "losing an incredible amount of time trying to plan that one period." They pointed out that it took "a lot of time and preparation" and that "the preparation time was not worth what we got from it." They also reported that "it was a problem because you don't have a definite amount of material to cover so you're researching all of the time and trying out your ideas in there." One teacher revealed "that part of the problem is that our interdisciplinary instruction is still so embryonic that we need to look at what we can do in our classroom first and then how to use that extra time in PAL." Another also said that their "time could be better spent working on instruction" and "making the courses more cohesive" instead of planning for the PAL class.

The teachers also expressed concern about the attitude of the students toward the PAL class. One teacher felt that

"the kids rebel and fight that class all of the time." She attributed this to the fact that "each kid had a different vision for that class" and some "don't want to be there." She reported that "the kids always say that they didn't sign up for it and that it was not one of their choices." She revealed the effect of the students' attitude on her own attitude when she said, "I sometimes have trouble getting motivated to do something when I know they are going to fight what I am trying to do." Another teacher said, "I had more discipline problems in PAL than I did in my other classes, and that got progressively worse as the semester went along."

Another concern that surfaced during these interviews was the length of the PAL class. One teacher said, "An hour and a half is a long time. Maybe if it were just for 30 minutes, it would work." That opinion was shared by another teacher who commented, "I think the time is too long. I think 30 minutes would have been great."

Although their concerns were many, most of the teachers were not sure what the fate of the PAL class should be. This ambivalence was reflected in their statements.

> I think they [students] are benefitting from it [PAL], but I don't know if it is enough to keep it.
>
> The way we were running it, I wouldn't want to teach that class again. Then with the new semester we started trying some new things. Now I am not sure.
>
> We are considering getting rid of it. I think we need to lose it now, but we may need to pull that option back in a year or two.

One teacher, however, had no doubts. "I don't want to do it again. It just is not going to work."

Implications for Parent Involvement

By the middle of the year, the teachers had discovered another benefit derived from implementing Project SAIL, increased parent involvement. As the year progressed, they found that "parent contact is definitely on the rise," and that "the parents have been big on this." Furthermore, they felt that the parent contact was "a lot stronger" because of the team structure. One teacher described his conversations with parents as being more beneficial because he could say that "this student is doing this in World History, and he is also doing this in Biology and Algebra and English." Another teacher talked about the positive changes that resulted when the four teachers held "a parent conference and worked together with them [parents]."

Assessment at the End of the Year

At the end of the year, the four teachers were interviewed a final time to ascertain their assessment of Project SAIL. As in the first two interviews, they viewed participation in the project as having far more benefits than liabilities both for the students and for themselves. One teacher observed, "I don't think the structure itself has had any negative effects," and another said, "The most

important thing is the teachers meeting together and knowing that same group of students."

No new topics emerged from this final set of interviews. Two subjects that were mentioned for the first time during the middle of the year were not addressed again, teaching teamwork by modeling it and implications for parent involvement. The teachers did, however, express ideas in two areas that they had discussed during the initial interviews but omitted during the second round. These included the adjustment of students to high school and the attitude of students. One teacher made a single comment regarding the issue of teacher autonomy, another topic that was discussed at the beginning of the year only. She said, "I normally know what I am going to do a semester in advance. I have had to go week by week and sometimes day by day. That is difficult to adjust to."

Support System for Students

As in the first two interviews, the teachers stressed the development of a support group for the students as one of the most significant benefits of Project SAIL. One teacher reported that "they had a support group right off the bat" while another commented that "they felt a part of the group, and being a part helped them emotionally." From the first day of school, "they knew they were all freshmen, and they were all on equal standing." "They grouped together, and they found strength in that." Referring to an

example given in an earlier interview, one teacher told about:

> Noticing for the first time that those kids were all sitting together in the cafeteria and realizing that the kids perceived that they were a group and that it was something they were thankful for. It gave them a place that they might not have had otherwise.

In describing the closeness of the students, another teacher related that "the class favorites and Most Handsome and Most Beautiful all came out of this group. They block voted because they all know each other." She expressed the opinion that "they had a sense of belonging more than the other kids in the building." Still another teacher mentioned the fact that "definitely, they worked together." She explained that "that was nice, to have them ask somebody how to do it instead of always having to ask me."

The teachers also emphasized once more the close relationship they had established with the students. According to one teacher, the strength of the project resulted from "the bonds among the students themselves and with the SAIL teachers. It was a close relationship, and we had respect for each other." Others expressed the opinion that the students "were more comfortable with the teachers" and that "it was a nice, friendly, comfortable atmosphere." The teachers believed that they had established a close rapport with their students as evidenced by the following comments:

> I have 95 students that I know really well, and that has not been true in the past.

> I know the students a lot better this year, and I think they know me a lot better.
>
> The students know that we are teachers they can go to if there are any problems.

Finally, the teachers described again the monitoring system that resulted from their sharing information and "just knowing what was going on with those kids." They believed that the support such a system offered was a tremendous benefit, especially to freshmen. As one teacher reflected, "My job is to know these ninth graders as much as it is to know history or geography or anything else. The more I can do to prepare myself on that front, the better I am going to be." They felt that the interdisciplinary team structure allowed them to "have a much more constructive discussion about the kids" because they were "talking about kids that we all knew well." It enabled them "to watch over a couple of kids just going through the topsy turvy freshman year and identify quickly when we were starting to lose them and to reel them back in." The teachers found that they were able to reinforce good behavior more easily as illustrated by the following example:

> When a kid got bumped in the hall and almost went through a window and the only thing that saved him was that a SAIL student grabbed him, we all heard about it immediately, and that student got some positive feedback from us.

They also noted that "a problem at home circulated really quickly too." One teacher summarized their sharing information about the students in the following way:

> The students are gone for a long time when they leave your room on the block schedule, and you don't see them for two days. The ability to keep up with what they have been doing over that time is extremely useful.

The teachers also expressed their belief that the students did not regard this informal monitoring system as negative. Indeed, one teacher said, "The students let me know that they were aware that I was concerned about grades in other classes and not just my class," and another observed, "They would voluntarily tell me that they were not doing well in a subject and ask what they could do about it." Although they believed that the students appreciated their watching over them, one teacher voiced uncertainty about how much effect that actually had on student behavior.

> The thing we can't quantify is that they know we have been watching over them, and what has that been worth in all of this? They know that if they start to slide, everyone is going to figure it out fast, and that may have served as a deterrent.

Cognitive Benefits for Students

For the third time, the teachers focused upon the interdisciplinary instruction as being beneficial for the students. They felt that "where the connections had been strong," the students "had done better academically" and that "it helped them to see relationships between classes." They found that the students were "seeing the connectedness of it" and that they were able to "understand what was going on in each class better without as much background or

preparation from individual teachers." One teacher gave the following example:

> At first, I spent more time telling them what we were going to do and how it would relate in different classes. Now I do less talking, and the students volunteer it. This last six weeks I just stated the title of the novel and the time period, and they began talking about who was President and what had happened then. I thought that was wonderful. It was the first time I had ever approached a topic with so little background given in class, and yet it all came out in the discussion.

Another teacher reported that "the connections were definitely made because they [students] brought up stuff across the board. They came into Biology, and they brought up something that happened in Algebra or English, and it related."

In assessing their first year of interdisciplinary instruction, the teachers made several different observations. One said, "The real threshold this year was when we decided we could teach thematically and get just as much done. Instruction improved 100% from that day." Another pointed out that the team structure had enabled them to "shift students around to get their academics taken care of" while the students were able to "talk to any of the teachers about a problem in Algebra" and to work "in PAL class to bring something like math up." One teacher cited "not having to deal with the problem of 'When am I ever going to use this?'" as a highlight of the year. According to her, the students never said this "because they were using it." One teacher summed up the year as follows: "The students

have gotten some instruction that is very well coordinated, and where it hasn't been well coordinated, it hasn't been any worse than what they would have gotten in a traditional situation."

The teachers continued to express the opinion that the consistency in rules and procedures "helped the students" and enabled them to spend more time on instructional matters. As one teacher said, "If we can remove their discomfort over inconsistencies, then we can focus on other things."

Adjustment to High School

At the beginning of the year, the teachers expressed the belief that easing the adjustment to high school would be a major benefit of the interdisciplinary team structure. At the end of the year, they gave examples to prove that this had indeed occurred. One teacher described one of the highlights of the year as "seeing the kids adjust so well to school and be successful." Another pointed out that "they didn't get lost in the shuffle and identified with each other really quickly." She cited the fact that "they joined clubs faster and formed relationships." The teachers believed that "they immediately became assimilated into the school."

The teachers also felt that "the consistency [in rules and procedures] helped at the very beginning. The students did not have to remember different rules for different

classes." They also reported that "it did not take as long for the students to be oriented about the program, rules, etc."

Attitude of Students

In the first round of interviews, the teachers discussed their expectation that the students would develop positive attitudes because of their participation in Project SAIL. In the last round of interviews, they assessed the project as having "had a positive effect on the students." One observed that "emotionally, they felt better about school and knew there were some positive things to look forward to." "They knew what was expected, and there is a certain sense of confidence when you know what is going on and what is expected." At the same time, "they realized that there was some accountability built into it and some responsibility." As one teacher said, "I don't ever hear someone say, 'Well, I don't have to do this in some other class.' That has not once come up." Although one teacher did say that "some students tended to put off work and to take advantage of other students by getting work from them rather than doing it themselves," she quickly added, "That happens in all classes, though."

The teachers were especially pleased that they were able to "get the average kid to show a little more excitement about school than just sitting there." As one teacher observed:

> I think we got more from the average kids than I have in years past. They are definitely doing a better job, and they come to school excited. I hadn't seen that before. It was like they were left out in the cold, and this was special for them.

Another teacher illustrated the positive attitude of the students as follows:

> The rewards are the smiles on the faces of the students when they achieve something and the excitement in the Algebra I classes. There have been times in the past when grades were all students worried about. Now there are cheers and excitement when they understand something. It sounds a lot louder.

Effects on Student Behavior

The teachers continued to reflect some ambivalent feelings about the effect of Project SAIL on student behavior. Although one teacher reported that "as the year went on, we had to say less about the rules, and yet they were more easily enforced," another saw the closeness of the group as a problem.

> The discipline problems were constant. The students were such a tight knit group, and they knew each other. They would blurt out comments and tease each other more than other classes in the past. We saw discipline problems that we normally wouldn't see. They almost felt too comfortable.

The teachers also discussed their earlier concern about their constant monitoring of the students' behavior having negative effects. One teacher believed that "the students were a little bit tense that their behavior and grades were known by all of the other teachers" and that "it bothered them in some ways that they were being scrutinized as a group."

Concerns about the Students

In the first set of interviews, the teachers expressed concern that the students might feel isolated as a result of Project SAIL. At the end of the year, they concluded that this fear had been groundless as evidenced by the following comments:

> If it [Project SAIL] had isolated them from their peers, it would have been a problem, but I don't see any evidence of that.
>
> I know their friends are not just in the SAIL program. They have a lot of contact with other students.
>
> Although they felt a natural affinity, I don't think they felt bound to this group.
>
> If it had made them feel that there was something wrong with them because they were a part of a team, that would have been a problem, but I don't see any evidence of that.

Unresponsive Students

At the end of the year, all of the teachers communicated their disappointment over "the students that we weren't able to reach." Although they realized "that no matter what you do, it is not going to reach everybody" and that "you are going to fall short in some areas," they could not escape the fact that they had "wanted to motivate everybody" and had "wanted everyone to pass." One teacher concluded that they had "banked too much on the interdisciplinary instruction, that it would affect those kids more than it did." He expressed regret that he had not "gotten some things like learning styles into the program sooner."

Some of the teachers indicated that although "the biggest disappointment was that little group of seven kids" that they were not able to reach, they did not know what else could have been done.

> We've got about seven that we haven't been able to reel back in to my satisfaction, and I'm not sure but what those seven would have been lost any way. I don't think we are responsible for those, but I think it would have been a larger group if we hadn't been watching over them as much.
>
> I thought that we would be able to grab hold of that very bottom and pull it up, but there were some students that it didn't matter what we did. They just were not going to allow us to help them. And that was the whole reason that I was looking at this program, to catch those before they fell through the cracks.

Support System for Teachers

All of the teachers were quick to point out that there had been "benefits for the teachers as well as the students." One teacher said that Project SAIL had enabled her "to gain a sense of belonging that I need too, not isolation in the classroom," and another said that her participation had made her "realize that education is a group thing." They felt that they "had been a good group" and had been able to "talk about discipline, attendance, the kids, and the subjects which helped." Interdisciplinary instruction "created a structure in which teachers could share strategies." As one teacher said, "I had three other teachers to bounce ideas off of." Another teacher explained that "a mutual respect sprang up among us and a caring about other departments."

The teachers also reflected that:

> It is much easier to work with kids when you have that kind of support than when you try to figure out by yourself what is going on.
>
> The teachers can get that reassurance that it is not just them and can better address the needs of the students.

They could also determine if the problem lay in their course as revealed in the following illustration:

> When you realize that you are not the only teacher that is having trouble with that student, it helps your self-esteem to know that it is not just you and that we all need to address something else with that student. Then there are some cases where it is just Algebra, and I can say, 'Okay, it is Algebra. They are not having problems with the other courses.' That is a positive.

Finally, the teachers talked about the fact that "other teachers had been very supportive." One teacher said, "I feel the teamwork. I don't feel it with just the four of us. Now I feel it with the school." Another explained that she was "much more aware of what was happening in other departments, not just the SAIL teachers but in the entire department."

Dynamics of the Teaching Team

At the end of the year, the teachers felt that "the team working together" was "the most valuable part" of Project SAIL. They described the essence of this approach as "a small group of teachers who have a common group of students and who can apply different instructional techniques and evaluate them together."

"There wasn't ever a leader, but the lack of formal structure didn't cause problems." The teachers believed that they "jumped over the teaming process and were basically a team to begin with, focusing on implementing the program and getting it to be successful." They observed that "the meetings just kind of ran themselves" and that "everyone made a contribution." The following comments reveal that none of them felt the need for a leader:

> We worked better without a formal structure because the leadership skills came out where we needed them.
>
> There was never a designated leader, and yet everyone moved in the direction of their strengths.
>
> Each six weeks it seemed one subject would be stressed a little more, and that teacher would take a lead.
>
> We just did whatever we needed to do.

The teachers expressed the opinion that "it is better when the teacher decides to work on a team." In discussing the interaction of team members, one teacher drew the following conclusion:

> I would recommend teaching on a team especially if the other members are very people-oriented and like to talk about what they are doing in the classroom. People who don't like to talk about what they are doing in the classroom shouldn't do this.

Professional Growth of Teachers

In this final round of interviews, the teachers continued to emphasize their growth as professionals as being a benefit that had resulted from Project SAIL. One teacher said, "It has helped me to be a better teacher" while

another commented, "We're able to deal with problems more effectively." They attributed this in part to the fact that "every time two of these teachers saw each other, they got something accomplished." They also believed that they were "mutually benefitting from our discussions" and that the project had motivated them to "try to find new and innovative things." As one teacher said, "I have always worked with math teachers, but now I hear the different approaches from the different disciplines. I feel I have a broader view." Another teacher confessed, "I found that I needed to change and adapt in my class where I wasn't reaching a student," and a third one admitted, "I definitely have grown in knowing about the other subjects and how well they can fit together."

The teachers also revealed that their participation in Project SAIL had taught them "the ins and outs of the structure of the school." One teacher said, "I have an overview now of what is going on in the whole building that I didn't have before." Another pointed out that her "communication with the other departments was so much broader now."

Attitude of Teachers

In discussing Project SAIL and their participation in it, the teachers were very positive. As one teacher said, "It is hard to find some disadvantages to it because it has been so positive for me." They spoke of their "sense of

pride" in what they "had tried to do" and concluded that "it was a great year."

One reason that Project SAIL appealed to these teachers was that "it was something new and challenging." One teacher reported, "With this, there is always something that is new, and it keeps me on my toes." Another revealed, "This is my sixth year of teaching. Every year starts running together. I think I will remember this year and the kids, though, because there was something new and different and special about it."

Some of the teachers attributed their renewed interest in teaching to the interdisciplinary instruction, observing that "anything that gives a spark to the regular curriculum just makes it more interesting." Other teachers expanded on that idea, saying "I think if I find it more interesting, I can present it in a more interesting way to the students" and "The interdisciplinary part is what keeps me interested in the classroom." All of the teachers concluded that they were "ready to try it again."

Time to Work as a Team

During the middle of the year, the teachers reported that "lack of time was a big problem," and at the end of the year, they concluded that "time has been our one problem." They pinpointed different reasons for the lack of time to accomplish what they wanted to do, ranging from "the meetings take time" to the difficulty of "getting the four of us

together outside of that conference period." They continued to feel that one planning period was not enough time. As one teacher explained, "If we had more time before or after school or more than one period every other day, we wouldn't get behind on some of our communication or drop the ball on some things."

The teachers also discovered that working together as a team involved more time than working independently. To begin with, they had "to have enough time to get everybody coordinated." Then, they had "to wait for decisions on other people." One teacher illustrated this dilemma as follows: "There are times when you are trying to get something together the night before when you normally would not have just because you had to wait on a decision from someone else." Finally, they pointed out that "people work at different paces. You have to wait for other people. It slows all of the planning down." As one teacher concluded, "It seemed like it took longer to do things because we were working as a team." She added, however, "It was also worth the extra time. If we had spent even more, I think it would have been worth it."

Participation in an Experimental Project

In reviewing the implementation of Project SAIL, the teachers revealed that the experimental nature of the project had been a liability for them. They were charting a new course, and it took them a few months to determine the

best direction in which to proceed. One teacher chronicled their search in the following passage:

> The biggest problem this year was letting the team evolve instructionally. We started off the year a lot more rigid in how we needed to conform to certain standards for these courses. The curriculum for World History had to be chronological, and certain things had to be covered in Biology in a certain sequence. As the year progressed, the group started to look at that and say, 'No, we can do it this way. We can do it thematically, and it will be a lot more meaningful.' If we could have done the year all one way, it would have been a lot easier to do.

The lack of a clear instructional plan posed definite problems for the teachers. As one teacher said, "What we have done is have independent thematic units, and only now do we see a broad theme for the year." Another teacher elaborated on this idea as follows:

> If we had at least chosen our themes for the whole year, it would have made it a lot easier because we could have been gathering materials and resources during the summer and then we could have gone in depth at our planning meetings. It was like we were starting and stopping all of the time.

One teacher expressed this liability succinctly: "A lot of things you don't know about until you've done them."

Positive Aspects of the PAL Class

In evaluating the PAL class at the end of the year, the teachers pronounced some aspects of it beneficial for the students. They believed that "the cooperative learning unit at the beginning was very good because they [students] did not have the social skills to interact in a group. They needed that." They also felt that they "were able to teach

them a lot of things that helped them the rest of the year, even if some of those things were just attitudes."

The teachers also expressed the opinion that the PAL class gave the students "an opportunity to do some extra things" and "time to see how it [the subjects] was all related." As one teacher observed, "Where we were able to use that PAL course to do some things that brought together work from all of the classes, I think it was useful."

The PAL class gave the students "time to study and to work with peers on a particular problem," and the teachers felt that freshmen "need a study period and it was good for them to be in there with a group of kids that they knew." According to the teachers, the students "said that it helped them to understand better and gave them time to work together, to work on their projects, to go to the library, and to do research." The teachers "saw that as a plus."

The teachers also qualified their conclusion that the PAL class had been beneficial. "It has worked out for 75% of the students. The other 25% don't do any work and don't see the usefulness of it unless they are doing an activity." The teachers also admitted that it was only "after much trial, tribulation, and discussion, that everyone agreed to keep the PAL course." One teacher described her opposition. "I was really against doing it again. The kids were the ones that convinced me that they needed it. Obviously, they got something out of it, or they would not have been able to

convince me." Another teacher assumed a more moderate stance.

> I'm not sure the students got as much out of it as I would have liked for them to, but at least we have an idea of what to do with it now. You just have to sit and stare at that thing for awhile. It is like moving into a new house. You just have to throw all of your furniture into a room. You sit and stare at it, and finally after a couple of hours, you see where to put it. Maybe we needed that time. It is something we plan to keep.

Concerns about the PAL Class

Despite their decision to keep the PAL class in the program for next year, the teachers still voiced some concerns about it. They agreed that "it had been under-utilized" and were frustrated that they had "spent so much time trying to figure out how to utilize it." One teacher confessed that "sometimes it became nothing more than a study period, and sometimes it wasn't even a study period." Another teacher was more outspoken. "Once we got those skills underway and they [students] learned to work in groups and saw how to use that in different situations, I personally don't think it was that useful." A third teacher summed up the disappointment when she said, "It never really did what I wanted it to do."

The teachers identified two problems in attempting to implement the PAL class. First, they pointed out that they were all out of their "disciplines in trying to do that and it required trying to be really creative in structuring it."

Although agreeing with this assessment, one teacher still expressed some hope for the future.

> It is the class that was not in our disciplines and that we did not have any experience in before. I think it is a good part of the program if we can get more secure in what we are going to do with it.

The second problem the teachers identified lay in the PAL course itself. One teacher said, "I think PAL would benefit the students more if it had more content." Another commented, "There needs to be more structure to it, more materials, and more planning. I don't know where we are going to find those."

Reaction of Students to Project SAIL

At the end of the year, 10 students were selected to serve as informed respondents and to give their reaction to participation in Project SAIL. They discussed the project as a whole as well as specific aspects of it that they felt were important, such as the relationships they formed, the help they received, the projects they did, the rules they followed, and the PAL class. They also talked about the reactions of other people to the project, including students who were not a part of it and their own parents.

Reaction to Project SAIL

Students' responses to the question, "How did you feel about participating in Project SAIL this year?," ranged from "I think it is great" to "It is a really good program to get into, and I am glad they had it" to "I don't mind going or

nothing." They reported that they liked their classes, that the teachers "made the classes fun," and that "it made school a lot more exciting." They felt that because "all of the teachers knew each teacher, it was more personal."

The students were quick to point out that "the work is not easier." One student said, "It is like any other class you would take. You do the same amount of work." Another student felt that she "learned more" saying, "It made us go farther than the other classes. My friend in Algebra is in the middle of the book, and we are almost done with it." Students agreed that they were "learning a lot" perhaps because "you sit there and actually pay attention." They concluded that the project "makes you better prepared for a job and for being a junior and a senior."

The students also commented on the closeness they developed as participants in Project SAIL. One student said, "To me it looked like we all needed each other" while another said, "It was kind of like an athletic team." They felt that "everybody seemed to be making better grades because they were trying" and that they "gained something. It helped people get along and study." Their observation was that "everybody in SAIL wants to do it again" and that they "wouldn't change anything about it."

When students were asked what they would tell an eighth grade student about Project SAIL, they gave the following responses:

> I would tell eighth graders that they should take SAIL because it will help them a whole lot and it will give them a study time.
>
> I'd tell an eighth grader to get in SAIL unless he is exceptionally smart because we take more time on stuff, not too slow but not too fast.
>
> I would tell eighth graders to join because SAIL is a great opportunity to get to know friends and it is a lot easier than just regular classes.
>
> It is a good place, and I recommend it.
>
> If you can be in it, you should.
>
> I would say to go with SAIL and not take an easy class like PreAlgebra but to go with Algebra and SAIL.

Reaction to the Teachers

In answering the questions, the students made several positive comments about the teachers. The following statements are representative of their remarks: "I like our teachers. They can relate to you." "I think the teachers have done a great job." "The teachers made it interesting." "I believe they have more pride in their work than most other teachers have."

The students felt that "the teachers were more personal," citing the fact that "the four teachers work together and take part in everything we do." They said that "the teachers pay more attention to you" and that "they will always make extra time for you if you think you are going to fail or if you are doing really bad." According to one student, "these teachers aren't as strict. They give you a

chance." Another explained, "They answer your questions, and when they do, it's like they answer for everybody."

The students also believed that the fact that "the teachers would consult with each other about what they were teaching" was beneficial. The following responses gave evidence of this:

> The teachers are more into it because they are working together.
>
> They can compare ideas, and I think they do a better job.
>
> It's good because they interact.
>
> They concentrate more on the work.
>
> All of these teachers want to be in this, and they are all good and work together.

Although the students were aware that the teachers "knew what was going on in every class" and "how we acted in other classes," they did not seem overly concerned about this. As one student said, "You kind of felt like they were watching you, but you just got used to it." Another student explained, "I am closer to my teachers this year than I was the year before."

Reaction to Other Students in Project SAIL

In addition to developing a close relationship with the teachers, the students became friends with each other. As one student said, "We all hang together." Other students explained that "in middle school there were cliques, but we are friends with everybody" and that "you know people better

because it seems like the whole group is friends with everybody."

The students gave several reasons for the development of these close friendships. They told how they were "around each other a lot more" because when they arrived in class, "it was the same people that you just saw last period." They also saw each other "at lunch and in the halls because we usually go the same way." They said that not only do "you see the other kids more," but you also "do a lot more stuff together, and you get to know each other." They believed that this enabled them "to really communicate with each other." As one student said, "I got to know them better and how they act because we talked more."

The students described this closeness as having advantages. The following statements reflect both academic and personal benefits:

> It helped if I needed help like in Algebra or something because I could go to one of my friends.
>
> My friends knew what we were doing in that class.
>
> It is more personal because everybody knows everybody and you all have the same teachers so you can ask each other about homework.
>
> You know more what they are like, and I guess it keeps you from hanging around the wrong crowd because you see what they are like.

The fact that only freshmen were in Project SAIL was seen as an advantage by many of the students. The following comments reflected their feeling about not having to contend with upper classmen:

> Everybody gets along because we are all in the same grade and we know where we are coming from.
>
> We didn't have any seniors or juniors with us. That made it where we were more friendly.
>
> In other classes, you have sophomores and juniors and stuff. When you just have freshmen, everybody knows who you are and where you are coming from, and it is a lot better because you get to know everybody.

One student spoke for everyone when he said, "You feel real close."

Reaction to Instructional Activities

In responding to questions about class activities and connections made among the courses, students discussed not only these two aspects of instruction but also the pacing of the work. They did feel that the instructional activities were beneficial and said that "the teachers made it more than just work." They explained that the teachers did not "just give you an hour lecture and then time to do your work" but that "you got to actually see and do it, and that made it better." One student said, "When you have hands-on, you learn more." Students provided the following two examples of these participative activities:

> In World History, we did a dig. We buried stuff in the dirt and dug it up like an archaeologist. It was real exciting.
>
> We do at least two or three labs a week. That helps you better understand it than the teacher telling you about it. It helps on tests.

The students also reported that "the teachers talk to you more about what homework assignments are about."

The students also discussed the fact that "everything relates to each other, all of the subjects." Although they admitted that "sometimes it got a little off, the teachers stayed together for the most part. That made it easier because you're not switching around." One student pointed out that "you stick around the same topic, and you don't forget things. You're hearing it over and over again." Another agreed, "You understand it more in each class," and a third student said, "You will understand it by the end, by the time you get done with it." The students believed that this interdisciplinary approach "was probably a little easier. It showed how things related, and it was all tied together." They indicated that when "it kind of split up, the projects came up, and they would combine it together." One student explained, "Your reports and your projects are all put together. There is just a little from each class. It's just a whole lot easier."

Students also mentioned the pacing of the activities as a benefit to them. They described two different types of pacing. First, they talked about the fact that the teachers could coordinate activities. "If we have tests, they separate them so that there are not two tests in one day." A student reported, "They [teachers] worked together so that we didn't have a lot of homework in every class. It helped out a lot."

Second, the students described the pacing of the work itself. One student indicated, "You can work at your own pace." The following responses gave evidence of their belief that the teachers adjusted the work to meet their learning needs:

> They would give us time so that we could ask questions instead of going home and doing our homework all by ourselves.
>
> It depends if they think we need more learning experiences. They would give us a work sheet to keep our memory fresh on that subject.

Reaction to Doing Projects

One aspect of Project SAIL that all of the students found to be positive was the assignment of one major project a six weeks. As one student explained, "Instead of having a project for each class, we had one big project with different sections." They "liked it a lot better" because "you don't have to worry about as many classes because you can do one project for all classes instead of worrying about different projects." Several comments reflected their relief at having one project instead of four.

> That was a lot easier because you don't have to keep up with four projects, all different about all different things.
>
> Last year in middle school when I did all different projects, I got confused on the projects and who I was doing them for and what. It lowered my grade.

Students also liked the fact that the teachers "gave you time to work on it [the project] in every class." They were quick to point out, however, that "you really worked hard."

They also felt that "the projects were fun. They were not boring," and the focus on one topic "got you more interested."

Reaction to Working in Groups

Students also commented favorably on the emphasis put on working in groups. One student said, "We worked in groups a lot, and that helped" while another student observed, "It lowers your stress." Still another student reported, "We did cooperative learning groups which is pretty cool." Students characterized the advantages of working in groups in the following comments:

> Group work helps because you have your ideas and their ideas. When you put them together, you get the right answer.
>
> Sometimes we can work together with partners and compare our answers and see how the other person got that answer. In the past they [teachers] made you do it all yourself.
>
> You can have help on your weak points.
>
> You just don't have to depend upon yourself for everything.
>
> You learn a lot from working in groups.
>
> In Algebra, group work really helps.
>
> You are not doing all of the work all of the time because you switch jobs around.

The students acknowledged that they had to be taught how to work in groups. One student described the process as follows:

> The teachers taught us to work in groups. In the beginning, we didn't work too well, but they told us

> you have to listen to everybody's ideas, and you can't talk loud so the other groups won't get mad. You have to listen to everybody's ideas and pick what is best or combine them. It made it a lot easier because we didn't have to do what one person said. Everybody had to give ideas, and if the teacher didn't see that, she would tell us so that we could improve on that.

The students believed that learning to work in groups was a skill they would use for the rest of their lives. One student expressed it this way.

> In SAIL they [teachers] stress working in groups to get along with others. When you get a job, you won't just work with your friends. You have to learn to get along with everybody. They put us in separate groups, and we have to work on projects together. It helps you get prepared for the real world to get to know everybody.

Reaction to Receiving Help from Others

Students were very appreciative of the fact that "if you need help, it's there." They believed that "the SAIL program is a lot easier because you get a lot of help." They did point out, however, that "if you need a lot of help, they [teachers] are there to help you, but if you don't, you can just do the work." Assistance was provided by both the teachers and other classmates.

Students believed that because the teachers knew what was being taught in the other classes, they could provide help in subjects other than their own. Comments such as the following one indicated this: "You can also go to one of those four teachers, and they know what you are doing in your other classes, and they can help you too." As one student explained, "They don't make you do work from other

classes, but they give you time." Another student reported, "They know when you are going to have a test and what it will be over. They remind you, and it helps." The students seemed to be most impressed by the fact that all teachers could assist with algebra as revealed by the following statements: "If I have a problem with algebra, I can ask my English teacher." "I can go to my history teacher for algebra." "If we needed help in algebra and we were in SAIL, the teacher would help us."

In addition to receiving assistance from the teachers, the students said many times that "you can ask a student to help you." They pointed out that the teachers had allowed this peer tutoring to occur. "After you did the work on your own, you could ask someone for help if you needed to." Other times the teacher "said if we had questions, we could ask a neighbor, or we could ask her." The teacher occasionally even said at the beginning, "Y'all can work together." The students liked this approach because "two heads put together maybe will get it."

The students felt that the fact that they were in Project SAIL enabled them to secure help more easily. One student described how "you learn who the people are in the group with you, and you pretty much get help when you need it from those people or from the teachers." Another one also said, "If you can't get help from your teacher, you can

get it from your friends because you are basically all getting the same assignment."

Receiving help was not limited to the school day. Students reported that they could secure assistance even when they were at home.

> You don't have to call around to see who has your teacher. You can discuss your homework, and it's not like you are on a different page.
>
> Your friends are in SAIL, and they can help you whenever your teacher is not going to be there. The teacher can't go home with you, and your friends will be there to help you.

Finally, the students indicated that they quickly learned to whom they should go for assistance. One student described the process.

> Everybody pretty much knows who is the best in every class. When we get our report cards, everybody asks, 'What did you get?' If they got a high grade, everybody will go to them and say, 'Will you help me?' because basically they understand it.

Reaction to Consistency in Rules

Students responded favorably to the question, "How did you feel about all of the teachers using the same set of rules?" They observed that "it was an advantage because you did not have to memorize each set of rules for each classroom" and that the consistency meant that "you were not confused about which rules go to which class." They concluded that "it was easier to remember the rules" because "when the teachers expected the same thing out of you, you could learn what to do in every class."

Reaction to the PAL Class

When asked what they thought about the PAL class, students' answers ranged from "it is really beneficial" to "it is okay" to "it can be boring." They did agree that its greatest asset was that "it gave you time to work." Their responses revealed that it was not only the time to work they valued but also the assistance they could receive.

> We did our homework and it helped a lot because if you did it at home, you just had your parents to help, and there you could learn how other kids were doing it.
>
> Some kids learn easier from kids than teachers, and that class really helped them.
>
> It is hard if you don't understand something to call somebody on the phone and have him explain it. You need to see how he worked it out, so it helps to have that time.
>
> It gave me free time to do the work, and you could ask the teacher.
>
> In the PAL class, the kids can help you because there is a group of you and you are all doing the same thing so that they can help you better than in a regular class.

The students did not regard the PAL class as "a study hall because in study hall you don't have to do anything. In there she gives us work, and we have to complete the work." When asked what type of activities they did in the PAL class, students answered as follows:

> In the PAL class we did cooperative learning, talked to each other, did puzzles together, and worked together a lot.
>
> Sometimes we would do a group activity like brain teasers.

> Some of the group activities are good, and some are kind of pointless. Some of them relate to a class, like Algebra.
>
> Sometimes we played games and did group activities. Lots of times we would do things and pair up.
>
> Sometimes it relates to what we are doing in other classes.

The students did not wholeheartedly endorse the PAL class, however. They pointed out that "it was kind of long, an hour and a half" and that "sometimes we didn't have anything to do." They reported that "all of the people didn't have homework all of the time" and that "if you didn't have anything to do, you just sat there." Even students who had homework admitted that "it kind of got boring if you sat there and studied the whole time." One student summarized this mild discontent with the following observation: "At times I think, 'Why are we here? We could be doing something else.'"

Reaction to High School

When asked how participating in Project SAIL affected their adjustment to high school, students answered that "it made it a lot easier to adjust to high school." One student confessed, "I was scared coming to high school. It helped a lot getting to know people in all of my classes." They talked about the fact that they "saw each other all day so you're not out of place" and that they would "get together at lunch and talk." They felt that "it helps you get used to the school and being in high school" because "you learn

where those classes are." The students concluded that "you didn't have to worry as much" and that being in Project SAIL "just made you relieved and more relaxed."

Reaction of Other Students Not in Project SAIL

In responding to the question, "What do your friends who are not in Project SAIL think about it?," the students replied that the other students would "like to be in it." One student said, "I know a lot of people who are not in SAIL, and they wish they were." Another answered, "I have friends who are not in the SAIL program, but they want to be in it next year." A third student observed that his friends who were not in SAIL "have had more trouble adjusting."

When asked why the other students would want to be in Project SAIL, the students gave the following responses:

> They didn't get to know each other because they might have one person in a class or maybe two classes.
>
> They always were worried about their projects. They can have three projects in one week from different classes. We just have one big project.
>
> They have to do research on different things. This is easier.
>
> If they have questions, they have to ask the teacher. We can ask our classmates and the teachers.
>
> They have to adjust to older people, and we just have to adjust to our class.
>
> My friends who were not in it had a lot more trouble with their subjects, not knowing what was going on and getting things mixed up.
>
> I make better grades, and they can see an improvement.

> We talk about what we are doing, and they think it sounds a lot easier than what they do in their classes.
>
> They think it would be more fun.

Despite opinions that Project SAIL sounded easier, the students who were participating in it did not believe that they were learning less than the other students. As one student explained, "Basically, we are doing the same thing as all the other classes, getting the same information, and learning just as much as they are, but I think that our grades are better."

Reaction of Parents to Project SAIL

When asked what their parents thought about Project SAIL, students answered that they "like it a lot" and "think it is great." One student replied, "My parents think it gives me a better chance to learn." Another elaborated a bit more, "My parents like it because my grades are improving in the four major subjects and they can see that I am studying more."

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CHAPTER V

CONCLUSION

Summary

The current emphasis on educational reform has caused people to question whether or not the American high school is effective in preparing students to meet the challenges of an ever changing world. The conclusion of many has been that the high school has changed very little in the twentieth century and that its students are not very well-equipped to face the demands of the twenty-first century. In the midst of this criticism, educators across the nation have been working to find the answer to the puzzle of how to improve the high school.

Some of the reform efforts have focused upon the internal organizational features of the high school and have included attempts to reduce its size and to make learning experiences more personal and more relevant. Project SAIL, a program designed to increase student achievement through interdisciplinary learning, was just such an attempt. The purpose of this study was to determine the effects of Project SAIL upon the achievement, attendance, and attitude toward school of the ninth grade students who participated in it. In addition to assessing its effects, this study also identified the specific benefits and liabilities of

such a program from the perspective of both teachers and students.

The review of literature pertaining to research on the American high school is divided into four sections. The first part focuses upon reasons why it is difficult to identify the problems of the high school. Among them are lack of research, differences in high schools, and the absence of clear evaluation criteria.

The second section deals with studies on the structure of high schools, especially their size and efforts to re-organize them. Evidence that large high schools are not as effective as small ones has led to numerous attempts to reduce their size by reorganizing them into smaller units, such as schools-within-a-school. These programs have met with limited success although the number of schools implementing such innovations is steadily growing.

Some high school educators are looking at successful middle schools to gain new insights. They have adopted the use of interdisciplinary teams as an effective way to organize a school and to develop closer ties among the teachers and students. Although there is some research to support the benefits of academic teaming, the results are inconclusive at this time.

The third section explores the organization of subjects in the high school, focusing upon the debate between teaching the separate disciplines and using an interdisciplinary

approach. Research shows that students do learn when connections are made among the various subjects although most educators agree there is a need for a balance between single subjects and integrated studies. Despite evidence that such a balance should be the goal of an effective high school curriculum, attempts to include interdisciplinary learning experiences have been the exception rather than the norm.

In the fourth section, the relationship between teachers and students is examined. Since many students need to develop a positive relationship with a caring adult, it appears that high school teachers in today's world must be people who can nurture as well as instruct. Efforts to promote open communication and to respond to students as whole persons are discussed.

This study investigated the effects of an interdisciplinary program, Project SAIL, upon 93 ninth grade students. They were compared with a control group of 42 ninth grade students who were not in the program. Participation in Project SAIL was based upon enrollment in four courses, English I, Algebra I, Biology I, and World History. Students in the program were taught by four teachers who shared a common planning period and also instructed the students in a fifth course, Peer Assistance and Leadership.

In addition to comparing the achievement in English I and Algebra I, attendance, and attitude toward school of the

two groups, the teachers were interviewed three times during the year to obtain their perspective of the benefits and liabilities of Project SAIL at its inception, its midpoint, and its end. Ten students were also interviewed at the end of the year to determine their reaction to the project.

Findings

Hypothesis one -- The first hypothesis stated, "There will be no significant difference in mean scores obtained from the teacher-developed, end-of-course English I test between ninth grade students who participate in Project SAIL and ninth grade students who do not participate in the program." The results confirmed the null hypothesis as there was no significant difference in the mean scores of the two groups tested.

Hypothesis two -- The second hypothesis stated, "There will be no significant difference in mean scores obtained from the Texas Education Agency-developed, end-of-course Algebra I test between ninth grade students who participate in Project SAIL and ninth grade students who do not participate in the program." Again, the null hypothesis was not rejected because there was no significant difference in the mean scores of the two groups.

Hypothesis three -- The third hypothesis stated, "There will be no significant difference in the average daily attendance rates between ninth grade students who participate in Project SAIL and ninth grade students who do not

participate in the program." The results indicated no significant difference between the average daily attendance rates of the two groups; therefore, the null hypothesis was not rejected.

Hypothesis four -- The fourth hypothesis stated, "There will be no significant difference in the mean scores obtained from the School Attitude Measure between ninth grade students who participate in Project SAIL and ninth grade students who do not participate in the program." Once more, the null hypothesis was proved to be correct as there was no significant difference in the mean scores obtained from the attitude survey taken by the two groups being studied.

Research question one -- The first research question asked, "What are some specific benefits of interdisciplinary teaming as perceived by the teachers?" Answers were gleaned from responses given by teachers in interviews conducted at the beginning of the year, the middle of the year, and the end of the year.

In all of the interviews, teachers emphasized the creation of a support system for students as a major benefit derived from participation in Project SAIL. They discussed the students' close relationship with each other as well as the closeness that developed between them and the students. They reported not only that the students shared a sense of belonging but also that they knew their students better and communicated more openly with them than they had with

students in the past. They also described how they were able to look after the students and assist them more effectively. They believed that membership in Project SAIL had eased these students' adjustment to high school.

The teachers also expressed their belief that the interdisciplinary approach had been beneficial in helping students to learn and to retain what they learned. They felt that this approach had been motivational and had raised the students' level of thinking as they began to make connections among the subjects themselves. The teachers also mentioned that the use of consistent rules had lessened students' confusion and preserved more time for instructional purposes. They talked about the fact that they had modeled teamwork for the students and described the positive attitude of the students that seemed to result from Project SAIL.

Apart from benefits the students received from participating in Project SAIL, the teachers discussed several benefits they received. Like the students, they appreciated the fact that they had a support group of other adults with whom they could share concerns and successes. They believed that they were more effective in both teaching and monitoring the students as a result of their interaction with each other. They stressed the harmonious working of their team and described the support they had received from other faculty members. They felt that they had grown

professionally and had increased not only their repertoire of teaching and management strategies but also their awareness of other subjects. The teachers reported a positive attitude throughout the year and a desire to participate in the project next year.

In assessing the effects of the PAL class, the teachers concluded that it had been beneficial in giving students time to study together and ask questions. They felt that some of the group activities, especially the ones dealing with interpersonal and group skills, had been effective and that it had occasionally been useful as a time to connect ideas learned in the various subjects.

Finally, the teachers pointed to increased parent involvement as a positive aspect of the project. They felt that being able to share with parents information from four classes instead of one was a plus.

Research question two -- The second research question asked, "What are some specific liabilities of interdisciplinary teaming as perceived by the teachers?" Again, responses given by the teachers during the three rounds of interviews provided the insights described below.

Although teachers expressed concern at the first of the year that students might become overly dependent or feel isolated, neither of these problems materialized as the year progressed. The teachers did question whether or not the closeness of the students led to additional discipline

problems, but they were not sure that this was indeed a liability. They regretted that there was a small core group of students that they were unable to reach, but they were not sure that those students would have responded any more favorably to a traditional approach.

The liabilities that the teachers felt were most apparent did not directly concern the students. The biggest liability that they reported was the amount of time required for them to plan and work together effectively. They never felt that they had enough time to do what they wanted to do. They also mentioned not being able to make decisions on their own and having taken on a very ambitious project which was experimental in nature. They realized that their interdisciplinary instruction was not always effective, that it had taken them several months to decide upon a clear instructional focus, and that they had often missed opportunities to coordinate their lessons. They also felt the pressure of being observed by others throughout the year.

The biggest disappointment from the teachers' perspective was the failure of the PAL class to make a significant difference. They believed that they never utilized that period effectively, and the lack of purpose for that class was a constant frustration. They also felt that they wasted a lot of valuable time trying to decide what to do in the PAL class since none of them was trained to teach that type of class.

Research question three -- The third research question asked, "What are students' reactions to participation in Project SAIL?" To determine the answer, ten students who participated in the project were interviewed at the end of the year.

The students expressed the opinion that they had benefitted from their participation in Project SAIL. They believed that they had learned as much as, and perhaps more than, other freshman students, that they had teachers who were more involved and more personal, and that they had developed very close relationships with their classmates, all of which made their adjustment to high school easier. They liked the fact that only freshmen were in their classes and that they could get to know each other. They felt that the interdisciplinary approach made learning easier and more interesting and that the pacing of the work was appropriate. They appreciated the fact that the teachers coordinated assignments, and they especially liked having one major project assigned each six weeks. They reported that they had learned to work in groups effectively and that they learned more when they could help each other. Receiving help from each other and from the teachers was a big advantage in their opinion. They also thought that consistency in the rules was beneficial to them.

The students' reaction to the PAL class was generally favorable. They appreciated having time to study, to ask

questions, and to receive help from their peers as well as the teacher. They thought some of the group activities were beneficial and occasionally related to the instruction given in the four subjects. They did point out, however, that they sometimes did not have enough to do in the PAL class and that it could be boring.

Students also reported that their parents were supportive of Project SAIL and that the other freshman students wished that they were in the project. The students said that they would recommend participation in Project SAIL to incoming ninth grade students.

Conclusions and Discussion

Current research has yielded inconclusive results on efforts to improve the American high school. It is not surprising, therefore, that this study finds that Project SAIL has had little impact after one year of implementation. The statistical data indicate that students who participated in Project SAIL did as well as students who did not participate in terms of their achievement in English I and Algebra I, their attendance, and their attitude toward school. Although the results were similar on the measures used, the scores of the SAIL students were significant at the .07 level of probability on the Algebra I achievement test. Some researchers might question the use of the word <u>significant</u> in reporting such a finding, but the difference is surely worthy of notice. The ethnographic data reveal that

the project has several promising aspects that should be pursued further.

The lack of significant differences in the achievement measures, the attendance rates, and the attitude surveys can be attributed to several possible explanations. To begin with, this study was conducted during the first year of Project SAIL. Important changes seldom occur quickly, and it is too soon to tell if this new approach will have lasting effects. The teachers were working together for the first time, and they were experimenting to a large extent. They found themselves with several concerns to handle, ranging from agreeing upon an instructional approach to finding time for additional meetings. They admitted that the interdisciplinary instruction was not well coordinated and that they had tried to do too much the first year. They were simply not able to do everything they had envisioned. It is possible that as they grow more experienced, they will achieve more significant results.

The amount of time required to begin a new program might have prevented the teachers from accomplishing as much as they had hoped. Now that they have worked through many of the curriculum issues and have developed strategies for coordinating their lessons, it can be assumed that they will be able to spend more time on monitoring students' attendance, providing additional motivation for students to excel

academically, giving special attention to unresponsive students, and working more closely with parents.

Another possible weakness in Project SAIL was the lack of purpose for the PAL class. The teachers struggled from the beginning to use that time effectively. Although they experienced some success, they never felt that they fully developed the potential of that period. Finding an effective way to use that class might have enhanced their efforts to achieve noticeable differences in the areas being measured. Since the teachers were well aware of the fact that this class was not utilized as effectively as possible, it can be hoped that they will modify its format to create a more significant impact on the students.

The data gathered in the interviews of both teachers and students give evidence that Project SAIL had several positive effects and that the approach is one worth pursuing. The favorable reaction of the teachers involved indicates that it did create a positive attitude among them while enabling students in Project SAIL to perform as well as other students on the quantitative measures used. The teachers believed that they were working with students in a more effective way, and they maintained a positive attitude about their work throughout the year. Given time to improve their strategies, they may be able to achieve significant differences because they believe that the interdisciplinary team is a better way to teach and learn.

Likewise, the students interviewed were very positive about their experiences as participants in Project SAIL. They too felt that it was a better approach than the more traditional one of unconnected classes and little interaction among students. If the students interviewed felt that they benefitted, it seems that even more students will be favorably affected by these techniques as the teachers become more experienced in the teaming process.

The results of Project SAIL, therefore, are inconclusive after the first year of implementation. Students who participated in the project achieved as much as other students, and the teachers involved in the project reacted very favorably to it. Continuing to improve upon this beginning seems a logical next step.

Caution should be taken not to generalize these results to other high schools. Project SAIL was not implemented according to a standardized set of guidelines; therefore, exact replication is not possible. Any program of this nature would be affected by the type of teachers participating in it, the curriculum being used, and the climate of the school.

The study does indicate, however, that the use of interdisciplinary teams of teachers is a promising approach. Students involved in such a program progress as much as other students in terms of achievement, attendance, and

attitude, and it has some positive effects on both teachers and students.

Recommendations for Practice

Based upon the results of this study, the following recommendations for practice are offered:

1. A team of teachers should work with a common group of students to facilitate their knowing the students and the students' knowing each other.

2. Teachers who are part of an academic team should be given adequate time for team planning as well as individual preparation.

3. Students should be encouraged to tutor each other.

4. Curriculum should be integrated in a meaningful way when possible.

5. Assignments should be coordinated among classes when possible.

6. Classes outside the core curriculum should have a clearly defined purpose.

7. A standard set of rules should be used in all classes.

Recommendations for Further Study

The following recommendations for further study are based upon findings from this study:

1. A longitudinal study should be conducted to follow the students identified in this study throughout their high school careers.

2. This study should be replicated in the second year of implementation of Project SAIL.

3. The use of an interdisciplinary team for ninth grade students should be studied in another high school in the same district.

4. The use of an interdisciplinary team for ninth grade students should be studied in another high school in a different district.

5. A study should be undertaken to determine the effects of being part of an interdisciplinary team on students of differing abilities.

6. A study should be conducted to compare the effects of a team of teachers teaching separate subjects to a common group of students with the effects of independent teachers teaching an integrated curriculum to a random group of students.

7. The effectiveness of a team of teachers with a daily common planning period and a daily individual conference period should be compared with the effectiveness of a team of teachers with only one shared period a day.

APPENDIX A

TEACHER INTERVIEW SCHEDULE

TEACHER INTERVIEW SCHEDULE

Questions to Be Used in September

1. In what ways do you expect the interdisciplinary team structure to benefit students?
2. In what ways do you expect the interdisciplinary team structure to cause problems for students?
3. In what ways do you expect the interdisciplinary team structure to benefit you as a teacher?
4. In what ways do you expect the interdisciplinary team structure to cause problems for you as a teacher?
5. What effect do you think the PAL course will have on students?
6. What concerns do you have about teaching the PAL course?

Questions to Be Used in January

1. In what ways do students seem to be benefitting from the interdisciplinary team structure?
2. What problems are students encountering as a result of the interdisciplinary team structure?
3. In what ways are you as a teacher benefitting from the interdisciplinary team structure?
4. What problems are you as a teacher encountering as a result of the interdisciplinary team structure?
5. In the beginning, all of you expressed concerns about time and autonomy. How have you handled these concerns?

6. Has the PAL course begun to assume an identity? How would you describe it at this point in time?
7. What effect does the PAL course seem to be having on the students?
8. How do you feel about teaching the PAL course?
9. What has disappointed you about the project?
10. What has pleased you about the project?
11. What changes do you plan to make this semester?

Questions to Be Used in May

1. In what ways did the interdisciplinary team structure benefit the students?
2. In what ways did the interdisciplinary team structure cause the students problems?
3. In what ways did you as a teacher benefit from the interdisciplinary team structure?
4. In what ways did the interdisciplinary team structure cause problems for you as a teacher?
5. How did you feel about being on an interdisciplinary team?
6. What advice would you give to a beginning interdisciplinary team?
7. What effect did the PAL course have on the students?
8. Was teaching the PAL course worthwhile? Why or why not?
9. What changes would you make in the project?

10. What part of the project would you preserve at any cost?
11. When you reflect upon the entire year, what stands out in your mind as the biggest disappointment?
12. When you reflect upon the entire year, what stands out in your mind as the greatest highlight?

APPENDIX B

STUDENT INTERVIEW SCHEDULE

STUDENT INTERVIEW SCHEDULE

1. Did it appear to you that your English I, Algebra I, World History, and Biology I teachers were working together? If so, what gave you that impression?
2. How well did you get to know your classmates in those four subjects?
3. Did you study similar topics in those four subjects? If so, how did you feel about that? Did it make learning easier, harder, or just the same as in other classes? Why do you think this happened?
4. Did it appear to you that these four subjects were connected sometimes? If so, what made you think so?
5. Were any of these courses interesting to you? If so, what made them interesting?
6. Were any of these courses boring to you? If so, what made them boring?
7. How would you describe an average class period spent in one of these courses?
8. How would you describe the assignments these four teachers gave you?
9. What type of activities did you do in the PAL class?
10. What did you think about the PAL class?
11. How would you describe being in the SAIL program to an eighth grader coming to this school next year?

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