INTERDISCIPLINARY TEAM ORGANIZATION : THE DISTRIBUTION, STRUCTURE, AND IMPORTANT COMPONENTS OF IMPLEMENTATION IN VIRGINIA HIGH SCHOOLS

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(ABSTRACT)

The purpose of this study was to determine the distribution of interdisciplinary team organization in Virginia high schools, to identify common elements of implementation, to assess the importance of those elements as perceived by team members, and to assess the relationship of these factors to school demographics. In this study, an interdisciplinary team was two or more teachers of different disciplines (one of which is a core subject), who share the same students and have a common planning period.

A stratified sampling was used to select 123 Virginia high schools of which 67 consented to participate in the study. All core subject teachers in each school were surveyed. The survey used Erb and Doda's (1989) model of four hierarchical developmental areas of interdisciplinary team organization as the research base.

Using the data from the surveys, 29 high schools with interdisciplinary team organization were identified. Responses of teachers from teaming schools were analyzed for significant relationships among the variables and teaming vs. nonteaming teachers as well as among the team teachers themselves. Chi-squares, cross tabs,

means, and correlation coefficients were used to analyze questions on the frequency and importance of the four hierarchical areas of interdisciplinary team organization.

Schools with interdisciplinary team organization are located in all seven regions, in both cities and counties, and in all enrollment groups of the commonwealth. These schools all have principals and teaming teachers who have been at their school for ten years or less. English/history is the most common team subject combination. All grade levels have some teams, with most teams on the 9th grade level. Teams tend to be one to two classes in size and heterogeneously grouped.

Team activities in Erb and Doda's four hierarchical developmental areas of interdisciplinary team organization were compared for frequency and importance of implementation. The highest level of interdisciplinary team development, Interdisciplinary Team Instruction, is generally implemented with more frequency and importance than the lowest level of interdisciplinary team development, Interdisciplinary Team Organization.

There were aspects of interdisciplinary teaming that were not implemented nor found important by most of the high school team teachers. This indicates a need for further research into the specific elements of high school interdisciplinary team organization.

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Table of Contents

List of Tables

List of Figures

CHAPTER 1

INTRODUCTION

Despite the efforts of more than 200 public commisions and task forces dedicated to improving academic performance in the schools; despite higher graduation requirements enacted in 45 states; and despite consistent messages that we want smarter students, students still don't seem to be learning much more than they did fifty years ago (Lewis, 1990). This is no longer the early 20th century, when schools needed to simply provide a comprehensive set of experiences to prepare adolescents for a newly modernized state. Late-20th century high schools deserve a more appropriate purpose than a warmed over version of principles promoted in 1918. Students leaving school after twelve years of "education" are ill-prepared to face a modern business environment where traditional skills no longer suffice. If the United States is to remain competitive in world markets, the direction of education must be changed. Education must be seen as life preparation rather than college preparation. (The Decade to Come, 1990).

Today, people live crowded together in a culture overloaded with information, data, opinions, and experiences accessed with the buttons on TV sets, home computers, and telephones (Sizer, 1984). 200 million words of new information are created every hour. Scientists predict there will be more inventions in the next decade than in the last century and a half; 90% of the technology that will be available to

citizens shortly after the year 2000 has not yet been created (Barnes, 1989). The world of work will require the ability to both manage information and work with people. We live in a globally interconnected world, in which biological, psychological, social, and environmental phenomena are interdependent. In a time of change fueled by new technological and scientific discoveries, education must undergo restructuring (Benjamin, 1989). The question is not, "What educational organization will we need to work in high tech jobs?" but rather, "What educational organization will we need to live, work, play, and contribute in meaningful ways to a high tech society?" (Gayle, 1990).

Tomorrow's adults will need to adapt to a changing world. Educators need to ask how high school organization can help develop students' skills and attitudes as planetary citizens with a global perspective. There is a tremendous gap between these goals and our existing high school structure (Brandt, 1989). This is the Information Age, but what kind of information are we presenting to students? Students are inundated with facts they are incapable of synthesizing in order to see the big picture (McCarthy, 1991). If schools are to become significantly better, they must be organized differently. High school organization must be replaced by learning systems not based upon the notion that a student spends six to eight hours a day, five days a week in a school building in which teachers are isolated by separate disciplines. This assembly line, Industrial Age model cannot continue into the next century (Glines, 1989).

The organization for tomorrow's high school must help students recognize how their decisions shape the future. The U.S. economy is shifting from an industrial-manufacturing base to one that is information- and service-based. Not only is our nation becoming more culturally and ethnically diverse, but our world is becoming more interdependent on a global scale (Adkins, 1989). These changes will require students to expect, understand, and cope with change, diversity, and national and international interdependence. In the future, high schools must be centered around ideas and problems, not fragmented into discrete subject areas controlled by a seven-period day (Benjamin, 1989).

High school in its present departmentalized setting is outmoded; life's experiences are not segmented but interrelated (Van Avery, 1980). To continue to narrowly compartmentalize high school organization may inhibit students' abilities to generalize, to see productive relationships, or to solve complex problems effectively (McClure, 1981). Traditionally, subject matter has been regarded as a fixed body of knowledge which all people needed to know. We must realize that in a world in which the amount of knowledge increases geometrically, we need to change our emphasis from the content driven approach of what to learn, to the process approach of how to learn (Ravitch, 1983). Unless students are able to recognize the connections among various facts they learn in their separate courses, they will not have an understanding of the world that was, that is, and that will be coming (Palmer, 1991). How can we expect students to develop higher-order thinking skills when they are not

asked to analyze and see the interconnections between school learning and the world at large (McCarthy, 1991)? High schools are not organized to teach the integrative skills necessary for the synthesis that business and society needs (Baumann, 1989).

Most schools are now structured very much like schools of the past. In high school, students attend six or seven classes each day on individual, isolated subjects (Keefe, 1992; McCarthy, 1991). Each department has its own standards, style, and subject matter unconnected to subject matter in any other department. The sequence of daily lessons and units follows no logical pattern, and results in intellectual chaos for students (Sizer, 1991). Consequently, the student sees high school education neither as a coherent whole nor as a set of academic imperatives arising from a cluster of subjects. The fatal isolation of subjects destroys the vitality of our high schools. The key question is more often "What should we know for the test?" than "What should we know?" Unfortunately, mastery of facts and not demonstration of conceptual understanding is what leads to an exceptional academic record. It is no wonder that most students perceive learning as memorizing a large collection of specific data. (Beane, 1991; Sizer, 1984).

High schools across the country tend to be large, impersonal places in which students lack a sense of belonging and see no connection between what they are asked to do in the classroom and the world that awaits them outside the school. Students say they are unmotivated and see no reason to attend school except that there is little else to do with their time (Maeroff, 1988). The National Assessment of Educational

Progress depicts a progressive downward trend in achievement as students mature. It is no coincidence that this decline occurs as students move through the departmentalized high school (Anrig & LaPoint, 1989).

Efforts to improve the high school must center on the four most fundamental flaws: (a) high schools are characterized by the frequent changing of classes and compartmentalization of information; (b) large amounts of data are presented in each class, but students rarely use the information because they fail to make the connection between school success and achievement in the work world; (c) as knowledge has expanded, the high school's attempt to "cover" everything has failed to address most topics in sufficient depth; and (d) high schools do not address interpersonal skills. To be successful socially and professionally, students need to complement their cognitive knowledge with good interpersonal skills, a strong value base, and a positive but realistic view of self (Cawelti, 1989; Cuban, 1984; Goodlad, 1984; Lounsbury & Johnson, 1985).

Over the past decade, interdisciplinary teaming has emerged as one of the few substantial reform concepts and practices with the capacity to transform the way schools operate for teachers and students (Arhar, Johnson, & Markle, 1988; Beane, 1992; Blomquist, Bornstein, Fink, Michaud, Oja, & Smulyan, 1986; Brandt, 1988a, 1988b, 1991; Cawelti, 1989; Cotton, 1982; Erb & Doda, 1989; Lieberman & Miller, 1986; Maeroff, 1993b; National Association for Core Curriculum, 1984). Various researchers' definitions of interdisciplinary team organization contain many of the

similar elements shown in Figure 1(Alexander & George, 1981; Beane, 1990a; Budde, 1988; Carnegie Council on Adolescent Development, 1989; Carnegie Forum on Education and the Economy, 1986; Cawelti, 1989; Epstein & MacIver, 1990; Erb & Doda, 1989; George, Stevenson, Thomason, & Beane, 1992; Holmes Group, 1990; Keefe, 1992; Krovetz, 1992; Lake, 1989; Maeroff, 1993b; McCarthy, 1991; Newmann, 1993; Peter, 1987; Sizer, 1992).

Interdisciplinary team organization is a powerful reform for American public education (Beane, 1993; Preston, 1984). Research suggests a definite advantage to interdisciplinary team organization as a means of addressing the individual differences of our diverse population (Boyer, 1983; Sizer, 1986, 1988). However, existing organizational structures continue to segregate subjects despite research that an interdisciplinary approach combined with close coordination in teacher planning results in increased student learning (Beane, 1990b; McCarthy, 1991). We must think of intellectual coherence for the students and make disciplines relate to one another, reinforce one another, and sequence themselves (Sizer, 1991). Interdisciplinary team organization allows for the interrelationships and interdependence among disciplines primary to the development of problem solving and critical thinking skills (Beane, 1993). This leads education to become more effective and optimizes learning for all students (Clark, 1989).

Interdisciplinary team organization allows teachers to become more involved in decision-making processes. Because they share the same students, teachers on a team

1. Two or more teachers responsible for instructing a common group of students.
2. Coordination of academic skills and content across the curriculum.
3. Common planning periods.
4. Flexible scheduling.
5. Interdisciplinary curriculum units.
6. Common team discipline and rules of student behavior.
7. Joint parent/teacher conferences.
8. Common grading standards and evaluation techniques.
9. Coordinated team tests and projects.
10. A team leader.
11. Common area of the building.
12. Staff development training in teaming.
13. Mentoring/Advising of students.

Figure 1

Elements of Interdisciplinary Team Organization

can respond more quickly, personally, and consistently to the needs of individual students, and can meet with parents to review students' progress and plan intervention. Instruction is more effective because team teachers plan units that enable students to make connections between ideas in different disciplines, thereby improving student achievement (Beane, 1993; John, Maruyama, Johnson, Nelson, & Skon, 1981; Lehr, 1984; & Slavin, 1983). Interdisciplinary team organization enables students to identify with a small unit which allows them to develop close associations (Jackson, 1993). Teaming improves students' group spirit, self-esteem, motivation to learn, and attitude toward school because of the closer, more cohesive supervision that teams provide (Anderson, 1988; Golner & Powell, 1992; MacIver, 1990).

The National Association of Secondary School Principals (NASSP) Commission on Restructuring report shows that when the high school is broken down to human scale and students are given individual attention, it lessens the anonymity that emerges from the typical assembly line of traditional high schools, and students perform better. The results within the Coalition of Essential Schools, serving working-class and lower-income students, are particularly dramatic: substantially lower dropout rates, higher attendance rates, reduced disciplinary problems, and better academic performance (Keefe, 1992). At-risk and special needs students in interdisciplinary settings also improve in academic performance, dropout rate, and self-esteem (Cuban, 1989; Hamby, 1989; Kerble, 1988).

Interdisciplinary team organization eliminates the isolation many teachers feel

by providing a working group of colleagues with whom they can conduct activities and discuss mutual problems. There are few significant pressures operating in most high schools to encourage coherent collegial collective work, and few school schedules include time for teachers to collaborate or to share what is happening in other classrooms, even with colleagues in the same department (Beane, 1991; Sizer, 1984). Teachers on interdisciplinary teams have higher morale, greater rapport with colleagues, and a heightened sense of professionalism. The combined thinking of several teachers creates an expanded pool of ideas, enhances individual capacities for handling complex problems, and provides both intellectual stimulation and emotional support. (MacIcver, 1990; McCarthy, 1991). As Lee Iacocca said, "If you want to succeed in this business, you all have to operate as a team" (Iacocca, 1984).

Statement of the Problem

Goodlad (1984) states, "To the unrelenting advocates of departmentalization, on the one hand, and the self-contained classroom, on the other, my response has to be, *A plague on both your houses*" (p. 308). While he does not use the term interdisciplinary team organization, he leaves little doubt that the problems of common educational practices cannot be adequately corrected unless reorganization occurs. Interdisciplinary team organization and scheduling have been successfully implemented in middle schools (Alexander & George, 1981), and there have been numerous studies citing the benefits of interdisciplinary team organization in the high school. However,

most high schools' organization has not changed. As previously noted, the current high school organization does not prepare students for the 21st century.

Purpose of the Study

The purpose of this study is to provide base-line data on Virginia high schools that have implemented interdisciplinary team organization, to define how that implementation has taken place, and to describe how team members perceived the importance of that implementation. Specifically, this study addresses the following questions:

(1) What is the distribution of interdisciplinary team organization in a representative sample of the high schools of the Commonwealth of Virginia?

(2) What is the structure of interdisciplinary team organization in Virginia high schools?

(3) How do Virginia high school teachers on interdisciplinary teams judge the frequency and importance of the various aspects of their team work and organization?

Significance of the Study

This study serves several educational purposes for Virginia high school administrators and teachers:

(1) The identification of the use of interdisciplinary team organization in Virginia high schools.

(2) The structure of interdisciplinary team organization as currently used in Virginia high schools.

(3) The identification of the perceived frequency and importance of the components of interdisciplinary team organization currently used in Virginia high schools.

(4) The creation of base-line data on the implementation of interdisciplinary team organization in Virginia high schools.

Definition of Terms

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

(1) Interdisciplinary Team - two or more teachers of different disciplines, one of which is a core subject, who share the same students and have a common planning period.

(2) Core Subject - English, history, mathematics, and science.

(3) High School - a school including only 9th through 12th grades.

Assumptions

This study is based on the following research assumptions:

1) There is a need for alternative organizational strategies to better meet the needs of high school students for the 21st century.

(2) Interdisciplinary team organization is an appropriate strategy for high

school students.

Limitations

The following limitations should be noted regarding this study:

(1) The study is restricted to high schools in the Commonwealth of Virginia.

(2) The study is restricted to core subject teachers in Virginia high schools.

(3) The study assesses only interdisciplinary team organization as a high school organizational plan.

CHAPTER 2

REVIEW OF THE LITERATURE

A review of literature indicates that periodic attempts have been made to improve high school organization; however, few permanent changes have resulted. This review of literature is divided into seven sections. The first section of this review will investigate the separate subjects model of high school organization. The second section identifies the rationale for restructuring into interdisciplinary team organization. The third section identifies the components of interdisciplinary team organization. The fourth section identifies the implementation activities of interdisciplinary team organization. The fifth section explains the benefits of interdisciplinary team organization for students and teachers. The sixth section explains research currently being conducted in high school restructuring. The seventh section explains the justification for further research.

Separate Subjects High School Organization

Since the early 1940's, educators have been getting clear signals that the separate subject approach does not compare favorably with other approaches, even in its claims regarding preparation for future education. In the Eight Year Study conducted in the early 1940's, graduates of thirty experimental high schools performed better in both academic and social measures than did matched peers from typical

subject area programs. Most surprizing, however, was the finding that graduates from the six high schools that varied most radically from the subject approach did better academically and socially than graduates from all other schools (Aiken, 1941). Harris (1972) states that:

> Subjects - reading, mathematics, language, and all the rest - are adult constructs. They represent legitimate adult interests, scholarly pursuits, practical specializations. Each is differentiated and isolated from the total world of experience for concentrated adult analysis, study, and use. For children, however, subjects - subjects of any kind, however conceived - hold no inherent interest, meaning, or use. For them the world has simply not yet so fragmented itself. (p. 42)

One of the fundamental problems in high schools is the fragmented separate subject approach to knowledge and skills. Dominant as the subject approach is in high school, it presents numerous problems. It suggests a distorted view of real life as it is commonly experienced by people (Beane, 1990a). Life and learning consist of a continuous flow of experiences around situations that require both large and small scale problem-solving. When we encounter life situations for problems we do not ask which part is science, math or English. Instead, we use whatever information or skills the situation itself calls for and we integrate those in problem-solving. Certainly such information and skills may be found within subject areas, but in real-life the problem itself is at the center and information and skills are defined around the problem. Therefore, the subject approach is alien to life itself (Beane, 1990a). Traditionally, the subject area approach is believed to be the way that high school is supposed to be organized. Within the teaching profession, the subject approach constitutes the

structural constant in the relationships among schools, universities, state departments, commercial text and testing concerns, and other education elites (Beane, 1990a). It presents the world to young people in terms of the specialized interests of academic scholars, reflects a Eurocentric view of knowledge organization, and is an artifice of real-life uses of content and skills (Beane, 1992). The subject areas or disciplines of knowledge around which the high schools have traditionally been organized are actually territorial spaces carved out by academic scholars for their own purposes. These subject areas contain much, but not all, that is known, and their boundaries limit our access to broader meanings (Beane, 1991). The National Assessment of Educational Progress (Applebee, Langer, & Mullis, 1989) states:

> The high school is treated as a collection of discrete content areas in which teachers move from one topic to another in lockstep fashion. As a result, lessons are often developed in isolation from one another and fail to help students relate new learning to what they already know. (p. 33)

High school education has become a series of fragments of information that students retain long enough to pass the test. However, most competent teachers recognize that the effort to stuff students with measurable fragments of knowledge has little or nothing to do with high-quality education (Keefe, 1992). Because the fragmented approach is so unsatisfying to students, more and more students are actively resisting. Their resistance is seen as a discipline problem and the cause of low achievement. When students say they hate school, one of the things they are actually saying is that they hate being asked to work hard at something that does not

fulfill their needs (Glasser, 1990). Whitmer (1990) states:

> Student alienation exists across the disciplines, is related to school structure far more than to any content area, and is not going to be solved on a departmental basis, nor will it be addressed effectively by a mere alteration of daily classroom activities... The content driven curriculum is a dinosaur that is unaware of its responsibility to become extinct. Having outlived its usefulness, it is now wreaking havoc on a rapidly changing society with which it cannot keep pace. (p. 68)

High school should be organized around the development of a limited number of concepts, skills, and attitudes. It is better to learn a few concepts well and to know how to apply them than to cover long lists of topics for purposes of recall. The purpose of education is understanding information (Goodlad, 1984). However, skills are often taught as if they are isolated categories of learning whose acquisition alone justifies their place in the school program. The fact is that skills are learned in order that we may do something which we believe is important. Knowing how and actually doing for some purposes are closely related; it follows that skills are only learned and worthwhile when they are actually applied to real-life situations (Beane, 1990a). By breaking through discipline boundaries, teachers can make the curriculum more relevant and contemporary because they can embed knowledge and skills in real-life contexts. This approach also helps students understand the real-world need for what they learn, making them willing to work harder (Willis, 1994).

For almost a century we have known that memory works mostly by association (Campbell, 1989). Association incorporates the new knowledge into the learner's existing knowledge base. The new information is then an integrated part of the

individual's understanding, and not an unrelated bit of information that is easily forgotten. Most of what we learn in schools is unrelated information that is soon forgotten because it is not related to prior experience and learning (Campbell, 1989). Educators teach too much information and must establish clearer connections among the bodies of knowledge in various fields (Cawelti, 1989). Students, who will be asked to manage the most complex century in history, are not well served by what we offer now. This flaw results in the unemployability of many graduates as their education is largely irrelevant to the concerns of the contemporary workplace (Holmes Group, 1990).

While the length of the school day has stayed about the same, the knowledge base has grown. Typically, high schools use a centralized scheduling system, and the master schedule frequently holds the entire school hostage. The master schedule makes it difficult to incorporate new courses that require different meeting time configurations other than traditional classes (Tewel, 1991). The traditional confines of the school day are literally bulging, and much of the newest, most valuable knowledge falls between the cracks of conventional subject areas (Brandt, 1988a). Teachers are driven to cover the expanding content at the expense of comprehension. Quantity prevails over quality (McCarthy, 1991), and students do not see the connections among school subjects, nor do they see the relevance of what they are studying to real life (Brandt, 1991).

Many studies have pointed out that most American high schools are geared

toward lower-order rote skills (Boyer, 1983; Goodlad, 1984; Powell, Farrar, & Cohen, 1985) and that they are far less challenging than high schools in many other countries (Sizer, 1984). Teachers have little opportunity to come to know the minds of the students well, and students have little opportunity to relate to any adult in the school on an extended, personal level. The fragmented nature of the daily class schedule and the relationships that must fit into it tend to reduce learning to the kinds of tasks that are easily bounded, making it difficult to find room in the schooling process for students to have those intense encounters with ideas and mentors that produce deeper levels of understanding and caring (Darling-Hammond, 1990). During a 45-50 minute period, it is possible for both student and teacher to avoid really encountering each other, bypassing genuine interaction and tolerating less than satisfactory personal relations, although the teacher may not consciously seek that condition (Lounsbury, 1990). In The Shopping Mall High School Powell, et al (1985) states:

> It is more important to organize school time so that (teacher collaborations) can occur, and are expected to occur, than to impose an ideal curriculum on schools from outside. (Teacher collaboration) empowers good teachers by removing the protective isolation that allows the mediocre to survive and the competent to remain impotent. (Teacher collaboration) underscores the fact that an effective school for students and a desirable one for teachers is a genuine community of learning for both. (p. 320)

Teachers are isolated in most school settings, and the work of teachers is rarely collegial in most typical schools (Kasten, Short, & Jarmin, 1989). Teachers need to talk more with each other about both education and students. They would then begin

to discuss instruction in its proper and broad context. This would allow for productive exchange about the effects of their efforts on students (McCarthy, 1991). They could define what all students should know and be able to do at the end of high school, even if students do not all achieve this to the same extent (Brandt, 1991). Many of the most important life skills that high schools can teach are not the exclusive domain of one subject. Students should be able to speak cogently, write clearly, read with understanding, listen with empathy, have facility with numbers, and solve problems if they are to be successful in the business world and society. These skills need constant reinforcement in many subjects throughout high school. Until teachers from all disciplines know what others are teaching, when, to whom, and why, they can not discuss these connections with each other (Powell et al, 1985). The real-world demands collaboration for the collective solving of problems (Sizer, 1992).

Tracking has also proven to be a damaging high school practice (George, 1988; Johnson & Markle, 1986; Toepfer, 1990). Young people placed in lower academic tracks or classes are locked into dull, repetitive instructional programs leading at best to minimum competencies. The psychic numbing these youths experience from "dumbed down" instruction contrasts sharply with the exciting opportunities for learning and critical thinking that students in higher tracks or classes experience (Carnegie Council on Adolescent Development, 1989). The needs of individual students become subordinate to the school's overall efficiency.

The sum of what humankind has learned, both technologically and in the realm

of ideas, is becoming more and more lopsided in favor of the recent past. Educators have not responded to this knowledge explosion (Bauman, 1989). This will not work; educators must look to the future. They must see how instruction with a more sensible way of organizing knowledge would offer greater benefits to students than the present form (Beane, 1990a; Bruder, 1990).

Rationale for Restructuring into Interdisciplinary Team Organization

James Keefe (1992) in the National Association of Secondary School Principals' (NASSP) Commission on Restructuring report defined the common principle of Essential Schools: the school's goal should be for each student to master a limited number of essential skills and areas of knowledge. While these skills and areas will reflect the traditional academic disciplines, the program's design should be shaped by the intellectual and imaginative powers and competencies that students need, rather than by "subjects" as conventionally defined. Instructional decisions should be guided by the aim of thorough student mastery and achievement rather than by an effort merely to cover the content.

NASSP research (Keefe, 1992) suggests that society in general, and education in particular, could benefit substantially from efforts to transform impersonal bureaucratic organizations into places where participants share goals and pursue a common agenda through collaborative activities that involve stable, personalized contact over the long term. In communities of learning, all teachers and students feel

included as full-fledged participants in the school; teachers and students relate to one another as whole persons; they participate in and take responsibility for the collective life of the school; and they can count upon one another for help in meeting both individual and collective needs.

The current cluster instructional model does not take undeveloped or emerging technologies into account. The advent of more sophisticated technology and the exponential growth of knowledge will soon make traditional schooling obsolete (Keefe, 1992). What is needed is a holistic study designed on a processes and concepts model. This provides a generic framework within which students learn to solve problems. Problem solving drives technological development and is the method which should drive instruction. It is the holistic method that allows knowledge to be transferred from one discipline to another. However, problem solving must be systemic in nature, not linear, if knowledge is to be successfully transferred from one discipline to another (Barnes, 1989). Scientists and engineers work in groups, seldom as isolated investigators. In the context of team responsibility, feedback and communication become more interactive and of a character very different from the usual individualistic discipline approach. Any topic in science, mathematics, or technology that is taught only in a single lesson or unit is unlikely to be recalled by the student by the end of schooling. To be used by students, technological concepts must not just be presented to students from time to time but must be offered to them periodically in different contexts and at increasing levels of sophistication in various

disciplines (American Association for the Advancement of Science, 1990). The National Council of Teachers of Mathematics (Brandt, 1991) asserts that it does not advocate the elimination of the subject areas, rather an investment in the disciplines to demonstrate their power together. Interdisciplinary team organization is a pragmatic way to organize subjects and make connections in order to motivate learning and reinforce ideas in different contexts (Steen, 1989).

Just as restructured businesses are replacing the fragmentation of the old assembly line with work teams and quality work circles responsible for entire products, so restructured schools must find ways for teachers to address the needs of whole students (Husband & Short, 1994). This objective will never be accomplished with fragmented courses, isolated programs, and batch processing (Darling-Hammond, 1990). Educators must teach the way people learn, utilizing the way the brain assimilates information, emotion, perception, and communication to create understanding. The integration of findings from neuropsychology and educational methodologies emphasizes interdisciplinary team organization as the way to immerse students in knowledge, the way to take information off the page and the blackboard and bring it to life in the minds of the students (Caine & Caine, 1991). It is easy to find meaning in books; a more challenging task is to find meaning in life itself (Bauman, 1989).

Components of Interdisciplinary Team Organization

Interdisciplinary team organization maintains traditional subject boundaries while aligning content and concepts from one discipline with those of another (Shoemaker, 1991). There is no single formula for interdisciplinary team formation; however, researchers have identified common elements of interdisciplinary team organization (Figure 1). The actual practices of scheduling and grouping used at a given school are affected by such local constraints as available human and material resources, demographic conditions, and educational philosophies (Braddock, 1990). The essential aspect of interdisciplinary team organization is that each student belongs to a manageably-sized group of students who are associated with a common group of teachers (Vars, 1991). The teacher team is provided the time, training, and resources necessary to treat students as individuals and to develop an educational program which will meet students' physical, emotional and cognitive needs (Wood & Muth, 1991; Walsh & Shay, 1993). It proposes to break down the size of the institution, to increase both student and teacher acceptance in performance of tasks, and to increase a sense of belonging so students have a better chance of developing self-esteem and self-actualization (Diebert & Walsh, 1981; Golner & Powell, 1992).

Implementation of Interdisciplinary Team Organization

Education innovations do not just appear spontaneously (Hord, Rutherford, Huling-Austin, & Hall, 1987). The implementation of interdisciplinary team

organization takes place in hierarchical stages. Teams evolve in different ways and at different paces (Epstein and MacIver, 1990; Erb and Doda, 1989; George, 1982; Pickler, 1987; Plodzik & George, 1989; and Smith, 1991). To assess interdisciplinary team development, the researchers' models use questions that divide interdisciplinary team development into hierarchical categories.

Erb and Doda's (1989) model of interdisciplinary team development uses 40 activities divided into four hierarchical areas of implementation: team organization, team relations, team responsibilities, and team instruction. The factors implemented in the four areas (Figure 2) depend on the experience of team members and their level of organization. The activities in Area 1, Interdisciplinary Team Organization, are at the lowest developmental level of implementation while the Area 4, Interdisciplinary Team Instruction, activities demonstrate the highest developmental level of implementation. After one level has been mastered, teams tend to concentrate on other areas, showing less activity in those areas already mastered (Erb & Doda, 1989).

Benefits of Interdisciplinary Team Organization

Interdisciplinary team organization is far more than an instructional innovation. It changes the professional and interpersonal dynamics of schools for teachers and students. Because it facilitates communication and collaboration, teaming fosters collegiality and interpersonal affiliation (Erb & Doda, 1989).

Interdisciplinary team organization improves educational productivity in the

Area 1: Interdisciplinary Team Organization:

- Team leader
- Meeting agenda
- Meeting guidelines
- Regularly scheduled meetings
- Minutes of meetings
- Discussion participation by all team members
- Make and follow through on team decisions
- Evaluate team function
- Resolve team disputes
- Keep files of meeting agendas

Area 2: Interdisciplinary Team Relations:

- Implement team student procedures
- Team solutions to student problems
- Coordinate discipline procedures
- Maintain team test/project calendar
- Conduct team parent/student conferences
- Meet with special needs and elective teachers
- Team recognition of student accomplishments
- Reschedule students within team
- Team field trips
- Use team guide lines for student scheduling

Figure 2

Area Activities of Erb and Doda's Model of Interdisciplinary Team Development

Area 3: Interdisciplinary Team Responsibilities:

- Share classroom practices
- Share conference and course information
- Make team parent phone contacts
- Discuss general problems and solutions
- Peer observation of team members
- Budget team funds
- Write team newsletter
- Keep student records
- Team staff development training
- Team suggestions to administration

Area 4: Interdisciplinary Team Instruction:

- Discuss curriculum
- Teach skills in all classes
- Coordinate team tests and projects
- Share each teacher's content
- Coordinate unit instruction
- Introduce new concepts and instructional techniques as a team
- Plan interdisciplinary units
- Review textbooks and teaching materials
- Teach interdisciplinary units

Figure 2 (continued)

Area Activities of Erb and Doda's Model of Interdisciplinary Team Development

form of student achievement (Ashton & Webb, 1986). It permits students to understand subject matter more thoroughly while utilizing fundamental skills more extensively (Bhalla, 1986). George and Oldaker (1985) found 28% of their interdisciplinary team respondents had consistent academic improvement, increased scores on state assessment tests, the California Achievement Test, and The Iowa Test of Basic Skills. Additionally, 85% of the interdisciplinary team respondents observed that teacher confidence in students' abilities had increased, leading to higher expectations and greater student productivity in academic classes. In the schools which employed teaming, students expressed more enthusiasm about school and their teachers than did the students in a departmentalized structure. At PS 19 (Queens, New York) reading and math scores had been declining and the school was on probation. Their first year of interdisciplinary teaming resulted in an increase of 5.9% in reading and 4.2% in math as assessed by standardized tests (Piro & Iorio, 1991).

The problem of disengagement and lack of motivation is acute for high school students (Brophy, 1987). Interdisciplinary team organization motivates students to achieve by fulfilling their need for competence, intrinsic interest, social support and a sense of ownership (Newmann, 1989). Students find a new appreciation for different subjects, discover the need to work as cooperative groups, realize their own worth as students, and lend their own expertise to the team process (Altshuler, 1991). At Springdale (Arkansas) High School, a member of the Coalition of Essential Schools, interdisciplinary teaming increased academic performance, enhanced students' sense of

belonging, and improved discipline. Students felt there was less pressure to cover a large mass of material and that the content they were learning was related to real life. They developed a sense of ownership toward the team and prodded those who interfered with learning into remembering why they are in school (Nickle, Flynt, Poynter, & Rees, 1990). As a result, school discipline improved, along with a decrease in truancy, school vandalism, and theft (George & Oldaker, 1985). Student performance within the Coalition of Essential Schools exceeded that of other schools in the areas of attendance, drop-out rate, academic performance, improved discipline, and continuation in higher education (Weinholtz, 1991).

Research shows interdisciplinary team organization creates a climate conducive to achieving academic success, positive student attitudes, and emotional stability by lessening student alienation (Epstein, 1990; Hoy & Miskel, 1987; Sinclair, 1980). Interdisciplinary teaming at Chinquapin Middle School (Baltimore, Maryland) transformed it from the worst school in Baltimore in 1972 to the best by 1988. Academic performance and attendance rates increased while suspension rates and discipline problems decreased (McKenna, 1989). Students at Burkholder Junior High (Henderson, Nevada) improved academically because teaming helped them know what teachers expected of them and the teachers expected more of them because they knew the students so well. A school-wide atmosphere of teacher-teacher, teacher-student, and student-student cooperation made students feel less isolated at school (Powell, 1993). Other research found a high percentage of students felt interdisciplinary teams

promoted intra-team, teacher-student, and peer relationships (George, Spreul, & Moorefield, 1987; Vars, 1987). Interdisciplinary team membership was helpful in the development of the whole student through emphasis on a strong team identity (George & Oldaker, 1985, p. 23) and led to higher student involvement in clubs and athletics (George & Oldaker, 1985; Cawelti, 1988).

Students liked interdisciplinary team organization because they felt it made them work harder academically and their teachers knew them better as individuals than did previous departmentalized teachers. It also improved student discipline and caused a positive affect on interracial relationships (Lake, 1989). Schools which employed interdisciplinary teaming had more interracial cooperation in the classroom and interracial friendships were more common than in non-teamed schools (Arhar, Johnston, & Markle, 1989; Metz, 1986).

There is evidence of the inadequacies of separate special education programs and the benefits of educating special education students in their local schools (Stainback & Stainback, 1984; Thousand & Villa, 1990; Villa & Thousand, 1988, 1992). Interdisciplinary team organization can align needed special education services with core curriculum and instructional activities. Teaming offers more promise than departmentalized structure for equity for all students. Special education students' attendance and learning improves when students feel a sense of group solidarity on an interdisciplinary team. Special education teachers operating on a team bring new insights into individualizing instruction, fostering independent study, and utilizing

cooperative learning (Hendrickson, Ross, Mercer, & Walker, 1988; Kerble, 1988). Investments in teacher collaboration ultimately improve student learning (Lieberman, Darling-Hammond, & Zuckerman, 1991).

Interdisciplinarily teamed at-risk and minority students are improving their performance at a faster rate than white students (Murphy, 1989). At-risk students generally get lost in the system; however, the interdisciplinary teams at Long Peak High School (Longmont, Colorado) have given at-risk students a sense of belonging and helped them achieve better grades. The School Attitude Survey indicates improvement in students' attitudes toward themselves and school. Their report card grades, district test scores (Bishopp, 1987), and school attendance (Spillman, 1993) have improved. Students seem less susceptible to destructive influences in their lives and see school as a needs-satisfying place. This results in fewer discipline problems and more learning (Brandt, 1988b; Cuban, 1989).

For teachers accustomed to working in isolation from their colleagues, the interdisciplinary team organization presents a unique opportunity for collegiality and school improvement (Sawyer, 1991; Tye & Tye, 1984). In successful schools more than unsuccessful ones, teachers utilized the norms of collegiality as they pursued a greater range of professional interactions with fellow teachers and administrators (Little, 1982; Rutter, 1979). Combining the expertise of several teachers increases the knowledge and skills held by each as an individual (Clapsaddle & Thomas, 1991). Teachers on interdisciplinary teams frequently conversed with colleagues about

instruction, student progress, and curriculum, and played active roles in building-level decision making (Erb, 1987; Ornstein, 1991). Collaboration among teachers within interdisciplinary teams developed a sense of belonging and camaraderie they hoped to instill in their students (George & Oldaker, 1985), helped student motivation, and encouraged stronger connections between school and community (Jackson, 1993). Students and curriculum were discussed more often, teachers knew what each other was teaching, and parent-teacher communication was more frequent (Rosenholtz, 1985). Team evaluations of students gave a more accurate assessment of both student performance and individual needs (Peters, 1992). Cooperative efforts resulted in a greater ability to meet individual needs, to give meaningful instruction, and to give a more student-centered approach (Erb, 1988; Golner & Powell, 1992). When teachers utilized cooperative strategies, they served as models for students to collaborate with their peers. Cooperative learning gave students the training in leadership, group decision making, and conflict management they needed to be successful in later life (Brandt, 1987).

Interdisciplinary team teachers differ significantly from their department staff counterparts in their perceptions of the general climate in their schools and their degree of job satisfaction (Ashton, Doda, Webb, Olejnik, & McAuliffe, 1981; Cotton, 1982; Sinclair, 1980). Team teachers perceive their school climate as more participative in relation to goal commitment, decision-making processes, and team cooperation (Murphy, Everetson, & Radnofsky, 1991). They are significantly more

supportive of their students and more receptive to student ideas (Walsh & Shay, 1993). Collaboration on an interdisciplinary team closes the gap between the way schools are and the way educators want them to be (Barth, 1985). This was demonstrated when teachers in North Carolina were given the opportunity to do their own restructuring. They elected to reorganize into interdisciplinary teams (Machail-Wilcox, Forbes, & Parramore, 1990). Piro & Iorio (1991) found teachers felt the most beneficial aspects of interdisciplinary teaming were meeting with their peers, planning together, and observing each other which resulted in improved management and presentation skills.

Researchers have been concerned with the need to make teaching a more rewarding profession (Johnston, Markle, & Ahar, 1988). A number of studies regarding the impact of workplace conditions on teaching and learning arrived at similar conclusions (Carnegie forum on Education and the Economy, 1986; Holmes Group, 1986; Lieberman & Miller, 1986; Little & Bird, 1985). They view teacher learning and professional development not only as vital to attracting and retaining quality teachers, but also as essential to student learning. The collaborative structure of interdisciplinary team organization alters attitudes and behaviors towards colleagues and helps change the norms that create isolation and deprive teachers of the benefits of learning from co-workers (Johnston, Markle, & Arhar, 1988). Cooperation with others is especially important for teachers because much of what they need to learn is procedural. When change is introduced in schools, it does not usually take into

account the inclination of teachers to keep doing what they are accustomed to doing (Fullan & Stiegelbauer, 1991). Procedural learning relies heavily on receiving feedback about performance and modifying one's implementation until errors are eliminated. Teacher cooperative support groups supply this feedback and allow change to occur. Interdisciplinary team teachers had more positive interpersonal relationships, increased social support, and enhanced self-esteem than teachers that functioned departmentally (Johnson & Johnson, 1987). Individual team teachers had enhanced self-image, stronger sense of professionalism, and reduced teacher stress than non-team teachers (Gatewood, Cline, Green, & Harris, 1992). Interdisciplinary team organization empowers teachers to function as a collegial group and make their teaching more rewarding.

Currently Conducted Research

Characteristics of interdisciplinary team organization at the middle school level have been extensively researched (Alexander & George, 1981; Beane, 1990a; Budde, 1988; Carnegie Council on Adolescent Development, 1989; Carnegie Forum on Education and the Economy, 1986; Cawelti, 1989; Epstein & MacIver, 1990; Erb & Doda, 1989; George, Stevenson, Thomason, & Beane, 1992; Holmes Group, 1990; Keefe, 1992; Krovetz, 1992; Lake, 1989; Maeroff, 1993b; McCarthy, 1991; Newmann, 1993; Peter, 1987; Sizer, 1992). However, none of this research responds specifically to high school organization. Inquiries to Mary Ellen Parker, Information

Services, National Association for Secondary School Principals; Lisa Street, Information Services, Association for Supervision and Curriculum Development; Betty Bradbury, Research Information Services, Phi Delta Kappa; Garry Walich, Assistant Director, National Center on Effective Secondary Schools, University of Wisconsin; Julie Comer, Center for Research for Context of Teaching, Stanford University; Lisa Laskey, Coalition of Essential Schools, Brown University; Ginell Miller, Clearing House, Education Commission of the States, Denver, Colorado; and Information Services, Center for Social Organization of Schools, Johns Hopkins University all yielded information on specific high schools which were implementing interdisciplinary team organization but there was no research focused expressly on the characteristics of high school interdisciplinary team organization.

Two surveys on high school restructuring in general were conducted in 1994. Gordon Cawelti (1994), Alliance for Curriculum Reform, conducted a National Survey of High School Restructuring for the Educational Research Service. Cawelti's definition of interdisciplinary teaching was that at least one class is team taught by teachers from different disciplines in an effort to provide more integrated learning experiences. Of the 3,380 national respondents, 19.6% of the high schools responded that interdisciplinary teaching was in general use, 26.2% responded that interdisciplinary teaching was partially implemented, 15.9% planned to implement it next year, 37.8% were not planning to implement it next year, and 0.5% had no response. Of the 89 Virginia high schools responding to Cawelti's study, 30%

responded that interdisciplinary teaching is in general use.

The second survey, The Virginia Study of High School Restructuring, was conducted by the Secondary Team on School Reform (1994), Virginia State Department of Education, under the direction of Douglas Cox. The survey lists several types of school organization which overlap this survey's definition of interdisciplinary team organization:

1. Teacher-advisor system - each teacher is assigned a group of students who are provided with a "home base" for academic, vocational, or personal assistance/counseling.

2. School-within-a-school concept - used to create smaller student bodies.

3. Organization - teachers are organized into broad areas other than traditional departments.

4. Flexible schedule - the school utilizes an alternative to the traditional six- or seven-period/day schedule (e.g. block schedule, semester system, etc.)

5. Interdisciplinary teaching - classes are team taught by teachers from different disciplines.

As of February 1995, the results of the Virginia survey had not yet been compiled.

Research that supports interdisciplinary team organization has generally been confined to middle level schools, while recent research concentrates on high school restructuring in general and not interdisciplinary team organization specifically. The

lack of reference to high school interdisciplinary team organization suggests that additional study is needed to address the unique characteristics of high school interdisciplinary team organization.

CHAPTER 3

METHOD

The purpose of this study was to determine the distribution, structure, and the frequent and important components of interdisciplinary team organization in Virginia high schools. The study collected both quantitative data from a survey of a stratified sampling of Virginia high schools and qualitative data from phone interviews with principals as well as written teacher comments on the surveys. The quantitative portion of the study was based on Erb and Doda's (1989) interdisciplinary team organization model, which organizes interdisciplinary team components into four hierarchical developmental areas (Figure 2).

Population

Based on data from Virginia Department of Education's (1993-94) Fall Membership in Virginia's Public Schools there were 205 9th-12th grade high schools in Virginia during the 1993-1994 school year. The 205 schools were ranked by region, using the seven regions defined by the Virginia State Superintendent's Advisory Council (Virginia Department of Education, 1992). In this study, the sample population was 60% (123 schools) of the total state population. In order to select a representative percentage of schools from each region (Table 1), the number of schools to be selected from each region was determined by dividing the number of

TABLE 1

Sample of High Schools by Region

REGION	SCHOOLS BY REGION NUMBER/STATE TOTAL (%)	SAMPLE SIZE BY REGION SAMPLE TOTAL x REGION %
1	42/205 (20.48%)	123 x .2048 (25 schools)
2	40/205 (19.51%)	123 x .1951 (24 schools)
3	15/205 (7.31%)	123 x .0731 (9 schools)
4	42/205 (20.48%)	123 x .2048 (25 schools)
5	30/205 (14.63%)	123 x .1463 (18 schools)
6	18/205 (8.78%)	123 x .0878 (11 schools)
7	18/205 (8.78%)	123 x .0878 (11 schools)

schools in the region by 205 and then multiplying that number by 123. Numbers were assigned to each of the 205 schools and a table of uniform random numbers used to select the random stratified sampling of 123 schools that participated in the study. Appendix A shows the sample schools' counties and cities by region.

Sample

For the purposes of this study, interdisciplinary teams must have at least one core subject teacher. Consequently, every English, history, mathematics, and science teacher at each participating school was surveyed. Additionally, phone interviews were conducted with principals from three teaming and three non-teaming schools.

Instrumentation

The interdisciplinary team organization survey (Appendix B) was composed of four sections of questions that required circling a response and a fifth section of broad questions giving the respondent an opportunity to add personal comments. It was piloted by eight high school teachers. They were asked to complete the survey and offer suggestions regarding clarity, ambiguity, duplication of material, ease of completion, and format. Using their input, changes were made to clarify questions, eliminate questions entirely, add questions, and rearrange questions for ease of understanding.

Survey sections I, II, and III addressed the first two research questions: "What

is the distribution of interdisciplinary team organization in a representative sample of the high schools in the commonwealth of Virginia?" and "What is the structure of interdisciplinary team organization in Virginia high schools?" The purpose of survey section I was to get basic school information and data on the respondent's general teaching experience. It contained questions which were used to determine the respondent's certification, educational level, subject taught, teaching experience, and department chair status. It also gave information on the enrollment of the school and the number of years the principal had been at the school. The responses were analyzed comparing teaming to non-teaming teachers at teaming schools.

In survey section II, teachers described the number of teaming teachers, coordinated planning time, team leader/department chair/administration meetings, percentage of students on teams at their school, and whether they taught as part of an interdisciplinary team. Survey section II determined who should continue to complete the survey. Respondents who were members of interdisciplinary teams proceeded with survey section III. If they were not a member of an interdisciplinary team, they returned the survey after completing survey sections I and II.

Responses in survey section III provided team information on the number of students, teachers, planning periods, grade levels, block schedules, and ability groups. These responses addressed the specifics of the individual teams and provided comparison data for interaction with survey sections I and II responses from non-teaming teachers. Additionally, teaming teachers' responses to survey sections I, II,

and III were analyzed for significant relationships using chi-square and multivariate analyses.

Survey section IV answered the question "What did Virginia high school teachers on interdisciplinary teams judge were the most frequent and important aspects of their team work and organization?" Survey section IV was adapted with permission of Patrice Gibson from her 1989 dissertation, Factors Present During the Development of Exemplary Interdisciplinary Teams in Middle Level Schools. The survey asked 28 questions, seven in each of four areas. The four areas (Appendix C) represent the four hierarchical developmental areas of Erb and Doda's (1989) model of interdisciplinary team activities as described in Figure 2. The survey directions required respondents to circle the response which best indicated how frequently their team participates in each activity. The scale was:

1=Never 2=Infrequently 3=Frequently 4=Very Frequently

The respondents were also requested to circle the response which best indicated how important the activity was to their team. The scale was:

1=Not Applicable 2=Unimportant 3=Important 4=Very Important

Two questions (8 and 22) were reversed to discourage automatic responses; therefore, a low frequency and importance score was desired. At the end of survey section IV were four broad questions which gave qualitative data on the best and worst aspects of interdisciplinary teaming, teaming activities that were not in the survey, and additional comments on interdisciplinary teaming.

Variables

The independent variables in the teaming schools were the respondent's position in the school (department chairperson, team leader, or classroom teacher), the subject matter (English, history, mathematics, and science), and the grade taught (9-12).

The primary dependent variables were the frequency of interdisciplinary team activities and the perceived importance of those activities. The activities were in the areas of interdisciplinary team organization, interdisciplinary team relations, interdisciplinary team responsibilities, and interdisciplinary team instruction (survey section IV).

The secondary dependent variables were: 1) school demographics, 2) teacher experience and education, 3) block scheduling, 4) team size, 5) team experience, and 6) team planning time. The individual items in survey sections I, II, and III were used to identify the relationships among these variables for interdisciplinary team teachers and between teaming versus non-teaming teachers.

Procedure

During May of 1994, 123 high schools were selected by stratified random sample from the state population. Principals of the 123 selected high schools were contacted by letter (Appendix D) asking for permission to conduct research in their schools. The letter explained the purpose of the research, who was to participate in

the research, and how the research was to be conducted. The principals that elected to participate were asked to indicate the number of teachers in each core discipline and the names of the core discipline department chairs. Principals from 55 high schools (44.7%) responded to the first mailing. Follow-up letters were mailed to those principals who failed to respond initially (Appendix E). The second round of mailings yielded 26 additional responses for a total of 81 responses (a 65.9% response rate). Of the 81 responses, 67 principals (54.5%) gave permission to use their schools, seven said no, and seven required prior approval of the survey by their superintendent's office. The seven requiring approval were counted as no responses as having the survey pre-approved would have biased the results of those surveys.

Every English, history, mathematics, and science teacher at each of the 67 participating schools was surveyed, for a total of 2,562 teachers. This eliminated bias of selection and allowed for cross-check of information among the teachers. The survey (Appendix B) included a cover letter to the teachers with assurances that individuals, schools, and teams would not be identified in the final report. Packets containing the surveys for all teachers in a given department were mailed to department chairs of participating schools on September 24, 1994. The packets included a letter to the department chair (Appendix F) explaining the purpose of the study, survey forms (Appendix A) for each teacher in their department, and stamped, pre-addressed envelopes for each survey. The department chairs were requested to distribute the surveys to each teacher in their department. Teachers were requested to

return the survey by October 15, 1994. Responses were received from 1062 teachers (41.5%) representing all 67 participating schools with 29 schools (43.3%) and 517 teachers (48.7%) indicating some form of interdisciplinary team organization in their schools. Of the 517 teachers in teaming schools, 83 (16%) indicated they were teaching on an interdisciplinary team.

After the surveys were returned and the data analyzed, six schools, three teaming and three non-teaming, were randomly selected for a phone interview with the principal. Although the primary source of data was the survey, principal interviews (Appendix G) provided data that could not be gathered from surveys alone (Yin, 1989).

Data Analysis

The schools were guaranteed anonymity, but individual school information was needed in order to answer the question "What was the distribution of interdisciplinary team organization in Virginia high schools?" and to analyze the survey responses. Therefore, code numbers were assigned to each survey that allowed sorting of the responses by the school's region, city or county, enrollment, and by the teacher's department and teaming or non-teaming status.

The city or county and enrollment of the schools were determined using the data from the Fall Membership in Virginia's Public Schools (1993-1994). High schools in Virginia ranged in size from 141 students to 2,881 students. To determine

the relative size of the schools, the enrollments of the 205 Virginia high schools were plotted on a histogram with a bell shaped curve (Figure 3). One standard deviation (552.25) on either side of the mean (1,151.6) was considered a medium sized school, above one standard deviation was designated a large school, and below one standard deviation was designated a small school. Small schools had an enrollment of 141-599, medium schools 600-1,702, and large schools 1,703-2,881. This was a purely arbitrary designation for the purpose of data analysis for this study. Chi-square analyses were used to determine whether a significant relationship existed between city or county, region, school enrollment, and length of time the principal had been in the building with respect to teaming vs. non-teaming schools. For the purposes of this study, the significance level was defined as a value of 0.06 or less on a chi-square.

Chi-square analyses of responses to all questions in survey sections I, II, and III by teaming and non-teaming teachers at teaming schools were used to identify significant relationships among the secondary variables and teaming vs. non-teaming teachers as well as among the team teachers themselves. Chi-squares, cross tabs, means, and correlation coefficients were used to analyze the survey section IV questions on the frequency and importance of the four hierarchical developmental areas of interdisciplinary team organization. Due to the small sample of teaming schools, Pillais, Hotellings, and Wilks tests for multivariate analyses were used where appropriate.

The purpose of the qualitative portion of this study was to provide different

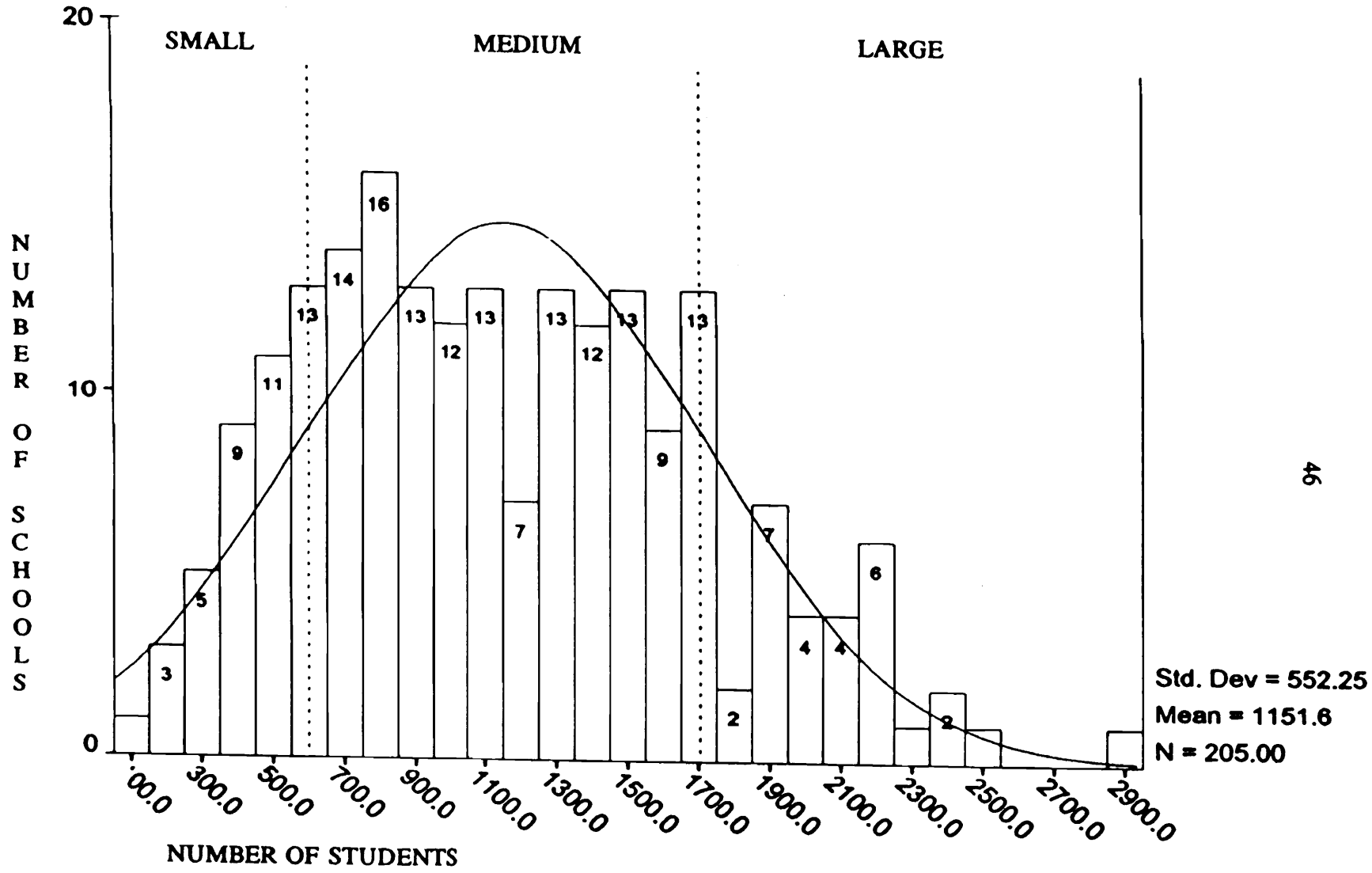

Figure 3
Virginia High Schools By Student Enrollment

views and more descriptive data, as well as to support survey data. Six principals, three from non-teaming schools and three from teaming schools, were randomly selected for phone interviews (Appendix G). The qualitative portion also includes teacher responses to the broad questions at the end of survey section IV (Appendix B). The qualitative data was analyzed by the four areas of Erb and Doda's hierarchical model of interdisciplinary team development. The qualitative data analysis was used to validate the quantitative data and give further information on the state of interdisciplinary team organization in Virginia's high schools.

Reliability and Validity

Several methods are included in the research to limit threats to reliability and validity of the survey. These threats might be the result of misinterpretation of the survey questions, teacher error in recording responses, rote responses, researcher error in entering the responses, or non-response to the survey.

Each threat was thought out and addressed if possible. Survey questions were carefully discussed with a pilot group to limit misinterpretation and clarify and eliminate unclear questions. Survey section IV of the survey was a modified version of Gibson's (1992) dissertation survey which was found valid in that study. Questions 8 and 22 in section IV were reversed to help eliminate rote responses. Only the four broad questions required more than a circled response, limiting teacher error in writing responses. By insuring confidentiality, requesting that the department chair

give out the surveys, and having the surveys returned directly back to the researcher, the researcher was able to assure the respondents that their responses would not be evaluated by superiors, encouraging complete and honest answers. Due to the volume of data that had to be processed, a professional data entry operator was hired to limit researcher error in entering responses.

The biggest limiting factor that could not be controlled was non-response. The study relied on the department chairs to distribute the surveys to the teachers and for the teachers to return the surveys. While responses were received from teachers in all 67 schools, only 41.5% of the teachers responded.

The validity of the qualitative data was based on the assurance that the information was confidential and schools would not be identified in any way. Some teachers and principals volunteered to be identified and included their name, address and phone number for further contact. The teacher information was not used nor were any of the principals who volunteered selected for phone interviews as that would have biased the results of those interviews.

CHAPTER 4

DATA ANALYSIS

The nature of interdisciplinary team organization in Virginia high schools was investigated by selecting a representative random sample of schools and surveying all core subject teachers (English, history, mathematics, science) in those schools. The surveys provided quantitative and qualitative data on school demographics, teacher experience and schooling, interdisciplinary team teachers, and the frequency and importance of interdisciplinary team organization activities. All team components and team activities in the survey were analyzed for statistical mean and significant interaction with each other. Follow-up phone interviews were also conducted with six principals from randomly selected teaming and non-teaming schools.

Analyses of the data provided an overview of where schools with interdisciplinary team organization are located, the structural variations among teams, and the frequency and importance of interdisciplinary team organization activities.

Sample High Schools

For the purposes of this study a high school was defined as a school consisting of 9th-12th grades. Based on data from Virginia Department of Education's (1993-94) Fall Membership in Virginia's Public Schools there were 205 high schools in Virginia ranging in size from 141 students to 2,881 students during the 1993-94 school year.

They were grouped by enrollment into small, medium, and large sized schools (Figure 3). In order to insure a representative sample of high schools from across the Commonwealth, the schools were further grouped by regions (Appendix A). A proportion system (Table 1) was used to select the number of schools from each region to participate in the study. From the group of 205 schools, 123 schools (60%) were randomly chosen to participate and principals from 67 of the schools agreed to allow their school to take part in the study. A total of 2,562 teachers in the 67 schools were sent surveys and 1,062 (41.5%) responded. The demographic breakdown of the 67 responding schools as to region, city or county, and enrollment is in approximately the same percentage as the total 205 high schools (Table 2).

Distribution of High School Interdisciplinary Team Organization

The first research question asked "What is the distribution of interdisciplinary team organization in a representative sample of the high schools of the Commonwealth of Virginia?" Interdisciplinary team organization was present in 29 (43.3%) schools with 517 teachers reporting some form of interdisciplinary team organization in their school. Of the 517 teachers in teaming schools, 83 (16%) teachers were actually on interdisciplinary teams. Schools with interdisciplinary team organization were located in all seven regions of the commonwealth, in both cities and counties, and in all enrollment groups (Table 2). Responses were also received from 545 teachers in 38 schools where no interdisciplinary team organization was present.

TABLE 2

Demographics of Population Sample

	State Population		Sample		Teaming Schools	
	Count	%	Count	%	Count	%
Region						
1	42	20.5%	16	23.9%	6	20.7%
2	40	19.5%	11	16.4%	3	10.3%
3	15	7.3%	5	7.5%	3	10.3%
4	42	20.5%	11	16.4%	5	17.2%
5	30	14.6%	10	14.9%	8	27.6%
6	18	8.8%	8	11.9%	3	10.3%
7	18	8.8%	6	9.0%	1	3.4%
TOTAL	205	100%	67	100%	29	100%
Location						
City	60	29.3%	18	26.9%	7	24.1%
County	145	70.7%	49	73.1%	22	75.9%
TOTAL	205	100%	67	100%	29	100%
Enrollment						
low -599	35	17.1%	13	19.4%	3	10.3%
600 - 1702	137	66.8%	45	67.2%	20	69.0%
1703 - high	33	16.1%	9	13.4%	6	20.7%
TOTAL	205	100%	67	100%	29	100%

Distribution by Enrollment

Although enrollment was not significant, it is clear that there is a sharp difference in the rate of teaming between the smaller and larger schools in the sample (Table 2). Comments on surveys from teachers in small schools indicated that the size of the school was a limiting factor for implementation:

> "Not practiced in a small school. No way to schedule planning together."
> "It was never initiated due to scheduling problems because our school is small and slim of staff."
> "Not enough teachers of the same children. We have too varied a curriculum."

There were not enough teachers of various subjects to form interdisciplinary teams and still offer a variety of courses. This does not imply that teachers at small schools were not interested in interdisciplinary team organization.

Teachers commented:

> "There is none, despite a great deal of interest among the faculty."
> "We share a great many students but not for teaming purposes - due to limited staffing."
> "Interdisciplinary teaming is done on a teacher-teacher initiative but no formal teams."

Teachers at middle and large sized schools also commented on the difficulties of scheduling for interdisciplinary team organization. When interviewed by phone, principals of medium and large non-teaming schools indicated they were looking into the possibility of implementing some form of interdisciplinary team organization in the future. The principal at a small non-teaming school concurred with teacher comments

on scheduling restrictions and had no plans to implement interdisciplinary team organization. The data imply that in middle and large sized schools there is more flexibility in scheduling and therefore more opportunities to implement interdisciplinary team organization.

Distribution by Principals' Tenure in the School

The principal's tenure in the school had a significant relationship with the presence or absence of interdisciplinary team organization in that school ($p = 0.039$). All principals of schools with interdisciplinary team organization had been in their schools for ten years or less while all principals with more than ten years tenure did not have any interdisciplinary team organization in their schools (Table 3). This seems to imply that principals that have been in their schools for a shorter time are more likely to implement interdisciplinary team organization. This appears to be independent to the size of enrollment in a school.

Structure of High School Interdisciplinary Team Organization

Survey sections I, II, and III (Appendix B) addressed the second research question, "What is the structure of interdisciplinary team organization in Virginia high schools?"

Teachers at High Schools With Interdisciplinary Team Organization

Section I of the survey focused on teachers. Teacher responses from the schools with interdisciplinary team organization were analyzed for comparisons

TABLE 3

Teaming and Non-teaming Schools By Principals' Tenure in the School

	N R% C% Total %	N R% C% Total %	N R %
Principals' Tenure	Non-teaming Schools	Teaming Schools	
1-5 Years	21 48.8 55.3 31.3	22 51.2 75.9 32.8	43 64.2
6-10 Years	10 58.8 26.3 14.9	7 41.2 24.1 10.4	17 25.4
11 Years +	7 100.0 18.4 10.4		7 10.4
N C %	38 56.7	29 43.3	67 100.0

X^2	DF	Significance
6.46028	2	0.03955

between the 83 teaming teachers and the 434 non-teaming teachers. The education level and department chair status showed no significant difference between the two groups. Approximately 50% of both groups had bachelors degrees and approximately 47% had masters degrees, with approximately 11% being department chairs.

Teachers' total years of teaching experience (at all grade levels) and the length of time in their present school did not have an impact on whether they were teaming or non-teaming teachers. However, high school teaching experience did have a significant relationship to teachers who were teaming or non-teaming ($p = 0.06$) (Table 4). 48.2% of the 83 teaming teachers had 1-10 years of high school teaching experience and 38.2% of the 434 non-teaming teachers had 1-10 years of high school experience. Teaming teachers seem to be newer to high school teaching than non-teaming teachers.

There was a very significant relationship between core subjects for teaming and non-teaming teachers ($p = 0.00$) (Table 5). History teachers comprised the largest group of teaming teachers (44.6%) followed by English teachers (28.9%), science teachers (12%), and mathematics teachers (9.6%). Conversely, more mathematics teachers responded to the survey than any other subject, followed in rank order by English, history, and science. The teaming subjects helped define the structure of interdisciplinary team organization.

TABLE 4

Teaming and Non-teaming Teachers By the Teachers' High School Teaching Experience

	N R % C % Total %	N R % C % Total %	N R %
Years of High School Experience	Non-teaming Teachers	Teaming Teachers	
1 - 5	100 81.3 23.0 19.3	23 18.7 27.7 4.4	123 23.8
6 - 10	66 79.5 15.2 12.8	17 20.5 20.5 3.3	83 16.1
11 - 15	59 75.6 13.6 11.4	19 24.4 22.9 3.7	78 15.1
16 - 20	88 91.7 20.3 17.0	8 8.3 9.3 1.5	96 18.6
21 - 25	66 88.0 15.2 12.8	9 12.0 10.8 1.7	75 14.5
26 - 30	45 88.2 10.4 8.7	6 11.8 7.2 1.2	51 9.9
31 +	10 90.9 2.3 1.9	1 9.1 1.2 .2	11 2.1
Total	434 83.9	83 16.1	517 100.0

X^2	DF	Significance
12.09080	6	0.05997

TABLE 5

Teaming and Non-teaming Teachers By Teachers' Subject

	N% R % C % Total %	N% R % C % Total %	N R %
Teachers' Subject	Non-teaming Teachers	Teaming Teachers	
English	124 83.8 28.6 24.0	24 16.2 28.9 4.6	148 28.6
History	94 71.8 21.7 18.2	37 28.2 44.6 7.2	131 25.3
Math	144 94.7 33.2 27.9	8 5.3 9.6 1.5	152 29.4
Science	71 87.7 16.4 13.7	10 12.3 12.0 1.9	81 15.7
English/History		3 100.0 3.6 .6	3 .6
Vo-Tech Prep		1 100.0 1.2 .2	1 .2
Latin	1 100.0 .2 .2		1 .2
N C %	434 83.9	83 16.1	517 100.0

X^2	DF	Significance
49.51430	6	0.000

Teams at High Schools With Interdisciplinary Team Organization

Sections II and III of the survey had components which focused on the structure of interdisciplinary team organization in the high school. There was a significant relationship between the teacher's team grade and three variables: sharing students and daily planning time with other teachers ($p = 0.026$) (Table 6), team subjects ($p = 0.02$) (Table 7), and block scheduling ($p = 0.058$) (Table 8).

Of the teaming teachers, 94.3% of 9th grade teachers, 75% of the 10th grade, 87.5% of 11th grade teachers, and all the 9/10 and 10/11 combinations as well as 12th grade teachers (91.6% of all team teachers) share students and daily planning time with other teachers (Table 6). The only shared subjects at all grade levels was English/history. Teaming was most prevalent at the 9th grade level (63.9% of the total teams) with all possible shared subject combinations represented (Table 7). Block scheduling was reported by 71.7% of 9th grade teachers and all 10th, 11th, and 12th grade teachers for 80.7% of all team teachers (Table 8).

There was a significant relationship between team grade and teams where all teachers teach the same group of students ($p = 0.065$) (Table 9) with 88.7% of the 9th grade, 62.5% of the 10th grade, and all the 11th and 12th grade teachers sharing students (88% of all team teachers). While there was no statistical significance between grade level and the number of students on the team, 56.6% of the teachers taught on teams that were approximately one or two classes in size.

TABLE 6

Teaming Teachers' Team Grade By the Number of Other Teachers With Whom They Share Students and Daily Planning Time

	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R %
Number of Teachers That Share Students and Daily Planning Time	9th	10th	11th	12th	9 & 10	10 & 11	
0	3 42.9 5.7 3.6	2 28.6 25.0 2.4	2 28.6 12.5 2.4				7 8.4
1	12 75.0 22.6 14.5		1 6.3 6.3 1.2		2 12.5 66.7 2.4	1 6.3 50.0 1.2	16 19.3
2	11 61.1 20.8 13.3	2 11.1 25.0 2.4	5 27.8 31.8 6.0				18 21.7
3	14 77.8 26.4 16.9	2 11.1 25.0 2.4	1 5.6 6.3 1.2			1 5.6 50.0 1.2	18 21.7
4	5 50.0 9.4 6.0	1 10.0 12.5 1.2	4 40.0 25.0 4.8				10 12.0
5	3 42.9 5.7 3.6	1 14.3 12.5 1.2	2 28.6 12.5 2.4		1 14.3 33.3 1.2		7 8.4
6	1 50.0 1.9 1.2			1 50.0 100.0 1.2			2 2.4

TABLE 6 (continued)

Teaming Teachers' Team Grade By the Number of Other Teachers With Whom They Share Students and Daily Planning Time

	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R %
Number of Teachers That Share Students and Daily Planning Time	9th	10th	11th	12th	9 & 10	10 & 11	
7	1 100.00 1.9 1.2						1 1.2
8			1 100.0 6.3 1.2				1 1.2
9	2 100.0 3.8 2.4						2 2.4
10	1 100.0 1.9 1.2						1 1.2
N C %	53 63.9	8 9.6	16 19.3	1 1.2	3 3.6	2 2.4	83 100

X^2	DF	Significance
71.22425	50	0.02592

TABLE 7

Teaming Teachers' Team Grade By Teamed Subject

	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R %
Teamed Subject	9th	10th	11th	12th	9 & 10	10 & 11	
English/ History	16 40.0 30.2 19.3	6 15.0 75.0 7.2	15 37.5 93.8 18.1	1 2.5 100.0 1.2	1 2.5 33.3 1.2	1 2.5 50.0 1.2	40 48.2
English/ History/ Science	17 89.5 32.1 20.5	1 5.3 12.5 1.2			1 5.3 3 33.3 1.2		19 22.9
English/ History/ Mathematics/ Science	12 85.7 22.6 14.5		1 7.1 6.3 1.2		1 7.1 33.3 1.2		14 16.9
English/ Mathematics/ Science	3 75.0 5.7 3.6	1 25.0 12.5 1.2					4 4.8
English/ Science	2 100.0 3.8 2.4						2 2.4
English/ Mathematics	1 50.0 1.9 1.2					1 50.0 50.0 1.2	2 2.4
Mathematics/ Science	2 100.0 3.8 2.4						2 2.4
N C %	53 63.9	8 9.6	16 19.3	1 1.2	3 3.6	2 2.4	83 100

X^2	DF	Significance
47.53549	30	0.02205

TABLE 8

Teaming Teachers' Team Grade By Block Scheduling

	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R %
Block Scheduling	9th	10th	11th	12th	9 & 10	10 & 11	
Have Block Scheduling	38 56.7 71.7 45.8	8 11.9 100 9.6	16 23.9 100 19.3	1 1.5 100 1.2	3 4.5 100 3.6	1 1.5 50.0 1.2	67 80.7
Do Not Have Block Scheduling	15 93.8 28.3 18.1					1 6.3 50.0 1.2	16 19.3
N C %	53 63.9	8 9.6	16 19.3	1 1.2	3 3.6	2 2.4	83 100

X^2	DF	Significance
10.67375	5	0.05825

TABLE 9

Teaming Teachers' Team Grade By Whether the Team Teachers All Teach the Same Students

	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R %
Same Students	9th	10th	11th	12th	9 & 10	10 & 11	
Have the Same Students	47 64.4 88.7 56.6	5 6.8 62.5 6.0	16 21.9 100 19.3	1 1.4 100 1.2	3 4.1 100 3.6	1 1.4 50.0 1.2	73 88.0
Do Not Have the Same Students	6 60.0 11.3 7.2	3 30.0 37.5 3.6				1 10.0 50.0 1.2	10 12.0
N C %	53 63.9	8 9.6	16 19.3	1 1.2	3 3.6	2 2.4	83 100

X^2	DF	Significance
10.37527	5	0.06527

Table 10 indicates that in 97.6% of the teams English was one of the components, and in 88% of the teams history was a component. 48.2% of the teams were the English/history combination, 22.9% were English/history/science, and 16.9% were English/history/math/science. There was a significant relationship between the shared team subjects and several variables: the number of teachers that team teach with a another teacher ($p = 0.02$) (Table 11), two planning periods ($p = 0.002$) (Table 12), and the ability group of the students ($p = 0.01$) (Table 13).

Most team teachers (97.6%) team teach with a teacher in another subject area (Table 11). However, while team teaching, not all teachers have two planning periods, one for personal planning and one for team planning. Only 36.1% of all team teachers have two planning periods (Table 12). Analysis of student ability groups indicated 54.2% of team teachers reported heterogeneous groupings (Table 13). The English/history and English/history/science teams had students in all four categories: heterogeneous, homogeneous honors, homogeneous average, and homogeneous below average. The English/history/math/science teams had three of the four categories, omitting homogeneous average.

The shared team subjects were significant to two demographic factors, the region ($p = 0.000$) (Table 14) and the enrollment ($p = 0.007$) (Table 15). No one type of shared subject team was found in all seven regions (Table 14). Region 1 had the most variety, with five different types of teams but only 14.5% of the total teams. Region 5 had four types of teams and the largest number (33.7%) of the total teams.

TABLE 10

Team Subject

Team Subject	Frequency	Percent	Cum Percent
English/ History	40	48.2	48.2
English/ History/ Science	19	22.9	71.1
English/ History/ Math/ Science	14	16.9	88.0
English/ Math/ Science	4	4.8	92.8
English/ Science	2	2.4	95.2
English/ Math	2	2.4	97.6
Math/ Science	2	2.4	100.0
Total	83	100.0	

TABLE 11

Teaming Teachers' Shared Subjects By the Number of Teachers With Whom They Team Teach

	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R %
Number of Teachers With Whom They Team Teach	English History	English History Science	English History Math Science	English Math Science	English Science	English Math	Math Science	
0				1 50.0 25.0 1.2			1 50.0 50.0 1.2	2 2.4
1	4 19.0 10.0 4.8	5 23.8 26.3 6.0	7 33.3 50.0 8.4		2 9.5 100.0 2.4	2 9.5 100.0 2.4	1 4.8 50.0 1.2	21 25.3
2	13 61.9 32.5 15.7	5 23.8 26.3 6.0	2 9.5 14.3 2.4	1 4.8 25.0 1.2				21 25.3
3	2 18.2 5.0 2.4	6 54.5 31.6 7.2	2 18.2 14.3 2.4	1 9.1 25.0 1.2				11 13.3
4	6 75.0 15.0 7.2		1 12.5 7.1 1.2	1 12.5 25.0 1.2				8 9.6
5	8 100.0 20.0 9.6							8 9.6

TABLE 11 (continued)

Teaming Teachers' Shared Subjects By the Number of Teachers With Whom They Team Teach

	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R %
Number of Teachers With Whom They Team Teach	English History	English History Science	English History Math Science	English Math Science	English Science	English Math	Math Science	
6	3 75.0 7.5 3.6		1 25.0 7.1 1.2					4 4.8
7	1 50.0 2.5 1.2		1 50.0 7.1 1.2					2 2.4
8	2 66.7 5.0 2.4	1 33.3 5.3 1.2						3 3.6
9		2 100.0 10.5 2.4						2 2.4
10	1 100.0 2.5 1.2							1 1.2
N C %	40 48.2	19 22.9	14 16.9	4 4.8	2 2.4	2 2.4	2 2.4	83 100. 0

X^2	DF	Significance
84.09521	60	0.02177

TABLE 12

Teaming Teachers' Shared Subjects By the Number of Teachers Who Have Two Planning Periods

	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R %
Planning Periods	English History	English History Science	English History Math Science	English Math Science	English Science	English Math	Math Science	
Have Two Planning Periods	9 30.0 22.5 10.8	14 46.7 73.7 16.9	4 13.3 28.6 4.8	1 3.3 25.0 1.2			2 6.7 100.0 2.4	30 36.1
Do Not Have Two Planning Periods	31 58.5 77.5 37.3	5 9.4 26.3 6.0	10 18.9 71.4 12.0	3 5.7 75.0 3.6	2 3.8 100.0 2.4	2 3.8 100.0 2.4		53 63.9
N C %	40 48.2	19 22.9	14 16.9	4 4.8	2 2.4	2 2.4	2 2.4	83 100

X^2	DF	Significance
21.18811	6	0.00170

TABLE 13

Teaming Teachers' Shared Subjects By the Teams' Ability Group

	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R %
Ability Group	English History	English History Science	English History Math Science	English Math Science	English Science	English Math	Math Science	
Heterogeneously	17 37.8 42.5 20.5	13 28.9 68.4 15.7	9 20.0 64.3 10.8	2 4.4 50.0 2.4	2 4.4 100.0 2.4	1 2.2 50.0 1.2	1 2.2 50.0 1.2	45 54.2
Homogeneously Honors	19 82.6 47.5 22.9	1 4.3 5.3 1.2	2 8.7 14.3 2.4					23 27.2
Homogeneously Average	2 33.3 5.0 2.4	4 66.7 21.1 4.8						6 7.2
Homogeneously Below Average	2 22.2 5.0 2.4	1 11.1 5.3 1.2	3 33.3 21.4 3.6	2 22.2 50.0 2.4				9 10.8
N C %	40 48.2	19 22.9	14 16.9	4 4.8	2 2.4	2 2.4	2 2.4	83 100

X^2	DF	Significance
34.57694	18	0.01068

TABLE 14
Teaming Teachers' Shared Subjects By the School's Region

	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R %
Region	English History	English History Science	English History Math Science	English Math Science	English Science	English Math	Math Science	
1	2 16.7 5.0 2.4	5 41.7 26.3 6.0	3 25.0 21.4 3.6		1 8.3 50.0 1.2		1 8.3 50.0 1.2	12 14.5
2	2 33.3 5.0 2.4			2 33.3 50.0 2.4	1 16.7 50.0 1.2	1 16.7 50.0 1.2		6 7.2
3	3 75.0 7.5 3.6	1 25.0 5.3 1.2						4 4.8
4	21 84.0 52.5 25.3		3 12.0 21.4 3.6	1 4.0 25.0 1.2				25 30.1
5	12 42.9 30.0 14.5	10 35.7 52.6 12.0	5 17.9 35.7 6.0				1 3.6 50.0 1.2	28 33.7
6		3 60.0 15.8 3.6	1 20.0 7.1 1.2			1 20.0 50.0 1.2		5 6.0
7			2 66.7 14.3 2.4	1 33.3 25.0 1.2				3 3.6
N C %	40 48.2	19 22.9	14 16.9	4 4.8	2 2.4	2 2.4	2 2.4	83 100

X^2	DF	Significance
77.75252	36	0.00007

TABLE 15

Teaming Teachers' Shared Subjects By the School's Enrollment

	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R % C % Total %	N R %
Enrollment	English History	English History Science	English History Math Science	English Math Science	English Science	English Math	Math Science	
Low - 599	1 16.7 2.5 1.2	4 66.7 21.1 4.8			1 16.7 50.0 1.2			6 7.2
600 - 1702	18 36.7 45.0 21.7	14 28.6 73.7 16.9	9 18.4 64.3 10.8	3 6.1 75.0 3.6	1 2.0 50.0 1.2	2 4.1 100.0 2.4	2 4.1 100.0 2.4	49 59.0
1703 - High	21 75.0 52.5 25.3	1 3.6 5.3 1.2	5 17.9 35.7 6.0	1 3.6 25.0 1.2				28 33.7
N C %	40 48.2	19 22.9	14 16.9	4 4.8	2 2.4	2 2.4	2 2.4	83 100

X^2	DF	Significance
27.21138	12	0.00720

Region 7 had only two types of teams and the fewest number (3.6%) of the total teams. In regards to enrollment (Table 15), only medium sized schools had teams in all shared subject areas, with a total of 59% of the total teams. While interdisciplinary team organization is located across the Commonwealth it is not evenly distributed as to region or school enrollment.

Although not significant by grade or shared subject, 83% of the teachers are on teams which have been together for 1-3 years (Table 16), 93% of the teachers have department chairs that meet regularly with the administration (Table 17), but only 34% of the teachers have team leaders who meet with the administration or department chairs (Table 17). While these factors may not be statistically significant in relation to other facets of teaming, they are all structural components of interdisciplinary team organization and impact on its implementation at the high school level.

Frequency and Importance of High School Interdisciplinary Team Activities

The third research question asked "How do Virginia high school teachers in interdisciplinary teams judge the frequency and importance of the various aspects of their team work and organization?" Survey section IV (Appendix B) had quantitative and qualitative responses that were analyzed to determine the frequency and importance of interdisciplinary team organization activities. All 83 teaming teachers answered the frequency section, but only 79 of them completed the importance section. The raw count and percentage for the frequency and importance of each

TABLE 16

Years the Team Has Been Together

Years	Frequency	Percent	Cum Percent
1	38	45.8	45.8
2	21	25.3	71.1
3	10	12.0	83.1
4	7	8.4	91.6
5	2	2.4	94.0
6	0	0	94.0
7	1	1.2	95.2
8	1	1.2	96.4
9	2	2.4	98.8
10	1	1.2	100.0
Total	83	100.0	

TABLE 17

Department Chair and Team Leader Meetings With the Administration and Each Other

	Frequency	Percent
Department Chairs		
Meet With Administration	77	92.8
Do Not Meet With Administration	6	7.2
Department Chairs		
Meet With Team Leaders	28	33.7
Do Not Meet With Team Leaders	55	66.3
Team Leaders		
Meet With Administration	29	34.9
Do Not Meet With Administration	54	65.1

activity are detailed in Appendix H.

Quantitative Data Analysis

Statistical means were used to group the interdisciplinary team activities by their frequency and importance. The interdisciplinary team activities which had frequency means of 3.0 or above, meaning activities that were frequently to very frequently implemented, were (Table 18):

11. Members of our team are aware of what is being taught in other team subjects.

15. We coordinate instructional units to overlap for reinforcement.

16. Each team member uses his/her own discipline structure and methods.

19. We share ideas about classroom problems and solutions.

24. We develop solutions to students' problems in our regular meetings.

The interdisciplinary team activities which had frequency means of 2.5-2.99, meaning activities that were frequently implemented, were (Table 18):

2. Our team prepares as a team for parent/student conferences.

3. We plan for new instructional techniques as a team.

7. Our team has regularly scheduled meetings.

10. We plan interdisciplinary units.

12. Students on our team each have at least one team member who knows the "total picture" of their grades, accomplishments, and problems.

13. We teach interdisciplinary units.

TABLE 18
Interdisciplinary Team Activities
Minimum = 1 Maximum = 4

Interdisciplinary Team Activity	Frequency Mean	Importance Mean	Correlation Coefficient
1. Our team keeps copies of meeting agendas.	2.17	2.20	0.75
2. Our team prepares as a team for parent/student conferences.	2.64	2.85	0.79
3. We plan for new instructional techniques as a team.	2.96	3.15	0.77
4. Members of our team ask other members to observe their classes and provide feedback.	1.92	2.32	0.81
5. Our team has a member who keeps minutes of our meetings.	1.94	2.00	0.90
6. We take students on team outings.	2.20	2.76	0.72
7. Our team has regularly scheduled meetings.	2.84	3.03	0.81
8. Members of our team neglect to follow through on team decisions.	1.53	2.41	0.29
9. Our team decides as a group how to spend team funds.	2.25	2.29	0.87
10. We plan interdisciplinary units.	2.81	3.25	0.67
11. Members of our team are aware of what is being taught in other team subjects.	3.13	3.35	0.55
12. Students on our team each have at least one team member who knows the "total picture" of their grades, accomplishments, and problems.	2.55	2.81	0.82
13. We teach interdisciplinary units.	2.86	3.23	0.69
14. Our team teaches some basic skills (such as punctuation) in all team classes.	2.82	3.11	0.76

TABLE 18 (continued)
Interdisciplinary Team Activities
Minimum = 1 Maximum = 4

Interdisciplinary Team Activity	Frequency Mean	Importance Mean	Correlation Coefficient
15. We coordinate instructional units to overlap for reinforcement.	3.01	3.30	0.76
16. Each team member uses his/her own discipline structure and methods.	3.07	2.95	0.67
17. We resolve our disputes in our regular meetings.	2.89	2.71	0.76
18. Our team has a member represent all members when making calls to parents.	2.22	2.37	0.87
19. We share ideas about classroom problems and solutions.	3.55	3.62	0.86
20. Our team discusses how we can improve our communication with each other.	2.60	2.84	0.79
21. We discuss curriculum at regular meetings.	2.87	3.03	0.73
22. One member dominates team discussions.	1.57	1.86	0.28
23. We plan as a team for staff development.	1.95	2.18	0.80
24. We develop solutions to students' problems in our regular meetings.	3.08	3.23	0.61
25. Team members share information learned at conferences or in graduate classes.	2.88	3.06	0.77
26. We hold student recognition events.	2.13	2.65	0.80
27. We reschedule students within the team as the need arises.	2.39	2.67	0.80
28. One member of our team is responsible for coordinating with non-team teachers who share our students.	1.58	1.99	0.65

14. Our team teaches some basic skills (such as punctuation) in all team classes.

17. We resolve our disputes in our regular meetings.

20. Our team discusses how we can improve our communication with each other.

21. We discuss curriculum at regular meetings.

25. Team members share information learned at conferences or in graduate classes.

After activities were evaluated for frequency of implementation, they were evaluated for importance to the team. The interdisciplinary team activities which had importance means of 3.0 or above, meaning activities that were important to very important, were (Table 18):

3. We plan for new instructional techniques as a team.

7. Our team has regularly scheduled meetings.

10. We plan interdisciplinary units.

11. Members of our team are aware of what is being taught in other team subjects.

13. We teach interdisciplinary units.

14. Our team teaches some basic skills (such as punctuation) in all team classes.

15. We coordinate instructional units to overlap for reinforcement.

19. We share ideas about classroom problems and solutions.

21. We discuss curriculum at regular meetings.

24. We develop solutions to students' problems in our regular meetings.

25. Team members share information learned at conferences or in graduate classes.

The interdisciplinary team activities which had importance means of 2.5-2.99, meaning activities that were important (Table 18):

2. Our team prepares as a team for parent/student conferences.

6. We take students on team outings.

12. Students on our team each have at least one team member who knows the "total picture" of their grades, accomplishments, and problems.

16. Each team member uses his/her own discipline structure and methods.

17. We resolve our disputes in regular meetings.

20. Our team discusses how we can improve our communication with each other.

26. We hold student recognition events.

27. We reschedule students within the team as the need arises.

In a comparison of the frequency and importance means of the activities, only activities 16, "Each team member uses his/her own discipline structure and methods," and 17, "We resolve disputes in our regular meetings," had frequency means above their importance means (Table 18).

Correlation coefficients were used to measure the relationship between the frequency and importance means of the same activity (Table 18). All activities had correlations above 0.55 except activities 8 and 22. This indicates a high relationship between the frequency and importance of all activities except activities 8 and 22.

Activities 8 and 22 were negatively stated:

8. Members of our team neglect to follow through on team decisions.

22. One member dominates team discussions.

Their frequency means were 1.53 and 1.57 respectively, which indicated that they were not often implemented, but non-implementation was the desired behavior.

The 28 activities in the survey were arranged in four areas (Appendix C) according to Erb and Doda's (1989) hierarchical model of interdisciplinary team development as described in Figure 2. The lowest level of implementation of interdisciplinary team development was Area 1, Interdisciplinary Team Organization, followed by Area 2, Interdisciplinary Team Relations, and Area 3, Interdisciplinary Team Responsibilities; the highest level of implementation was Area 4, Interdisciplinary Team Instruction. After categorizing the activities into the four areas, the frequency and importance scores for each area were correlated. There was a hierarchical pattern among the means of the four areas which was most evident in comparison of both the frequency and importance means for the extremes, Area 1, Interdisciplinary Team Organization, and Area 4, Interdisciplinary Team Instruction. Area 1, Interdisciplinary Team Organization had lower means than Area 4,

Interdisciplinary Team Instruction (Table 19).

Data from each school was analyzed for frequency and importance responses in each of the four areas (Table 20). Statistical means of 3.0-4.0 were responses in the frequently to very frequently and the important to very important range. Only six teaming schools, schools 1, 13, 17, 20, 24, and 26, had no responses with a mean of 3.0 or higher. 23 (79.3%) of the 29 teaming schools had higher means for both frequency and importance of activities in Area 4, Interdisciplinary Team Instruction, than Area 1, Interdisciplinary Team Organization which indicates a high level of team development.

A comparison of data by school in each of the four areas for frequency versus importance of interdisciplinary team activities showed a trend toward a hierarchical development of team activities starting at organization, moving to relationships, responsibility, and up to instruction (Table 20). Seven schools had a higher frequency than importance of activities in the lowest developmental level of team activities, Area 1, Interdisciplinary Team Organization. Moving up the activities hierarchy, Area 2, Interdisciplinary Team Relationships, had four schools, Area 3, Interdisciplinary Team Responsibility, had one school, and Area 4, Interdisciplinary Team Instruction, had two schools with a higher frequency than importance mean score. This would tend to imply that as teams progress developmentally, the activities which were more frequently conducted were also more important to the team.

The frequency of Area 4, Interdisciplinary Team Instructional, activities was

TABLE 19

Frequency and Importance Scores in the Four Hierarchical Developmental Areas of Erb and Doda's Interdisciplinary Team Organization

Area	Mean	r Frequency, Importance	Minimum	Maximum
Frequency of Team Organization	2.22	0.83	1.14	3.43
Importance of Team Organization	2.43		1.00	3.86
Frequency of Team Relations	2.44	0.81	1.14	3.57
Importance of Team Relations	2.73		1.00	3.86
Frequency of Team Responsibility	2.48	0.90	1.00	3.71
Importance of Team Responsibility	2.66		1.00	3.86
Frequency of Team Instruction	2.92	0.76	1.43	4.00
Importance of Team Instruction	3.20		1.00	4.00

TABLE 20

Erb and Doda's Hierarchical Developmental Areas of Interdisciplinary Team Development By Teaming School

	AREA 1		AREA 2		AREA 3		AREA 4	
Teaming School	Frequency of Interdisciplinary Team Organization	Importance of Interdisciplinary Team Organization	Frequency of Interdisciplinary Team Relationsionship	Importance of Interdisciplinary Team Relationsionship	Frequency of Interdisciplinary Team Responsibilities	Importance of Interdisciplinary Team Responsibilities	Frequency of Interdisciplinary Team Instruction	Importance of Interdisciplinary Team Instruction
1	2.29	2.43	2.62	2.92	2.41	2.69	2.50	2.92
2	2.29	2.57	2.00	2.43	2.14	2.57	2.29	3.00
3	2.39	2.33	2.29	2.76	2.43	2.48	3.24	3.48
4	2.57	3.21	3.14	3.50	3.43	3.71	3.93	3.93
5	2.32	2.61	2.54	2.89	2.43	2.68	3.14	3.29
6	1.95	2.29	1.90	1.81	2.57	2.62	3.38	3.52
7	2.76	2.86	2.90	3.19	2.81	2.88	3.29	3.31
8	3.29	2.71	2.57	3.00	2.43	2.71	2.00	3.00
9	3.14	3.57	2.86	3.00	2.71	2.71	4.00	4.00
10	3.00	2.86	2.86	3.00	2.29	2.29	3.14	3.29
11	1.93	2.14	2.50	2.43	3.43	3.29	3.71	3.64
12	2.43	2.29	3.14	3.21	2.86	2.86	3.36	3.36
13	2.71	2.14	1.86	1.43	2.14	2.14	2.14	1.71
14	2.00	2.64	2.29	2.71	2.14	2.29	2.36	3.00
15	2.29	2.29	2.71	2.86	2.00	2.00	3.14	3.14

TABLE 20 (continued)
Erb and Doda's Hierarchical Developmental Areas of Interdisciplinary Team Development By Teaming School

	AREA 1		AREA 2		AREA 3		AREA 4	
Teaming School	Frequency of Interdisciplinary Team Organization	Importance of Interdisciplinary Team Organization	Frequency of Interdisciplinary Team Relationsionship	Importance of Interdisciplinary Team Relationsionship	Frequency of Interdisciplinary Team Responsibilities	Importance of Interdisciplinary Team Responsibilities	Frequency of Interdisciplinary Team Instruction	Importance of Interdisciplinary Team Instruction
16	2.96	3.29	2.29	3.04	2.61	3.14	2.86	3.39
17	1.43	1.29	1.29	1.29	2.00	2.00	2.57	2.57
18	1.82	1.93	2.39	2.25	2.29	2.23	2.70	2.91
19	3.21	3.50	2.64	3.00	2.71	3.00	2.86	3.07
20	2.43	2.71	2.71	2.86	2.43	2.43	3.00	3.00
21	1.79	1.96	2.57	2.64	2.57	2.61	3.04	3.39
22	2.71	3.10	3.14	3.33	3.05	3.19	2.24	2.76
23	2.46	2.95	2.68	3.52	2.79	3.38	3.25	3.62
24	2.86	2.86	2.00	2.43	2.71	2.71	2.57	2.57
25	1.38	1.29	1.81	2.57	1.67	2.14	1.98	3.43
26	2.52	2.67	2.43	2.76	2.81	2.90	2.71	2.90
27	1.43	1.43	2.29	3.14	2.29	2.29	3.86	3.86
28	1.50	1.86	2.02	2.38	1.83	2.07	3.10	3.21
29	1.50	1.71	1.86	2.25	2.14	2.57	2.89	3.39

higher than the frequency of Area 1, Interdisciplinary Team Organization, activities in 23 schools, and they were more important in 25 schools (Table 20). These 23 schools indicate a high degree of development with Area 4, Interdisciplinary Team Instructional, activities being more important and implemented at a greater frequency than lower level teaming activities. The four schools where Area 1, Interdisciplinary Team Organization, activities were being implemented with greater frequency and importance than Interdisciplinary Team Instructional activities, teaming schools 13, 19, 22, and 24, show a lower level of interdisciplinary team development.

When the schools were grouped by region (Table 21), regions 2 and 3 showed higher means for the frequency of activities in Area 1, Interdisciplinary Team Organization, than importance. This implies that teachers in regions 2 and 3 were doing Area 1, Interdisciplinary Team Organization, activities more frequently even though they did not think them as important. All regions showed a higher mean for importance than frequency in Area 2, Interdisciplinary Team Relations, Area 3, Interdisciplinary Team Responsibilities, and Area 4, Interdisciplinary Team Instruction (Table 21). According to Erb and Doda's hypothesis, an interdisciplinary team on the low end of development should have higher means on the Area 1, Interdisciplinary Team Organization activities, while more developed teams should have higher means on the Area 4, Interdisciplinary Team Instruction activities.

All the survey questions were analyzed with a MANOVA procedure to determine to what extent any item or combination of items was responsible for

TABLE 21

Erb and Doda's Hierarchical Developmental Areas of Interdisciplinary Team Development By Region

	AREA 1		AREA 2		AREA 3		AREA 4	
Region	Frequency of Interdisciplinary Team Organization	Importance of Interdisciplinary Team Organization	Frequency of Interdisciplinary Team Relationsionship	Importance of Interdisciplinary Team Relationsionship	Frequency of Interdisciplinary Team Responsibilities	Importance of Interdisciplinary Team Responsibilities	Frequency of Interdisciplinary Team Instruction	Importance of Interdisciplinary Team Instruction
1	2.5	2.8	2.6	2.9	2.5	2.6	3.2	3.4
2	2.3	2.1	2.6	2.9	2.3	2.4	2.8	3.4
3	2.9	2.7	2.5	2.6	2.7	2.9	2.7	2.9
4	1.8	2.1	2.2	2.4	2.3	2.6	3.1	3.3
5	2.3	2.5	2.4	2.7	2.6	2.7	2.9	3.2
6	2.1	2.2	2.4	2.5	2.3	2.4	2.7	2.8
7	2.5	2.7	2.4	2.8	2.8	2.9	2.7	2.9

variations in teacher responses concerning the frequency and importance of team activities. Table 22 indicates that a significant MANOVA was found for this analysis ($p=0.025$). Consequently, a univariate analysis was performed to determine the source of that MANOVA F. The univariate analysis indicated that Area 4, Interdisciplinary Team Instruction, significantly differentiated across regions and school enrollment size ($p=0.035$) (Table 22).

Teachers in regions 1, 2, 4, and 5 who were working in schools with enrollments of 600 or more had higher than the group mean for importance of Area 4, Interdisciplinary Team Instruction, than teachers from other regions and smaller schools (Table 23). When enrollment was analyzed by region (Table 24), medium sized schools (600-1,702 students) in regions 1, 2, 3, 4, and 5 (16 schools or 55.2%) as well as large sized schools (1703-2,881students) in region 4 (4 schools or 13.8%) and small sized schools (141-599 students) in regions 1 and 5 (2 schools or 6.9%) had the highest means for Area 4, Interdisciplinary Team Instruction. Only region 3's small and large schools had lower means for Area 4, Interdisciplinary Team Instruction, than Area 1, Interdisciplinary Team Organization, indicating a low level of interdisciplinary team development.

Qualitative Data Analysis

Teachers were provided an opportunity to describe additional information and/or clarify answers to survey section IV, which concluded with four broad questions about interdisciplinary teaming. The teachers comments were categorized

TABLE 22

MANOVA of School Region By School Enrollment

Multivariate Tests of Significance

Test Name	Value	Approx. F	Hypo. DF	Error DF	Sig. of F
Pillais	1.38582	2.36094	12.00	33.00	0.025
Hotellings	4.47354	2.85810	12.00	23.00	0.15
Wilks	0.09796	2.82462	12.00	24.10	0.015

Univariate F-Tests with (3,12) D.F.

Area	Hypo. SS	Error SS	Hypo. MS	Error MS	F	Sig. of F
Frequency of Team Organization	0.26238	3.28303	0.08746	0.27359	0.31968	0.811
Importance of Team Organization	0.51705	4.55950	0.17235	0.37996	0.45360	0.720
Frequency of Team Instruction	1.77551	3.71824	0.59184	0.30985	1.91005	0.182
Importance of Team Instruction	1.77219	1.77218	0.59073	0.14768	4.00002	0.035

TABLE 23

Interdisciplinary Team Organization and Interdisciplinary Team Instruction
By Demographic Distribution

	Mean Frequency of Team Organization	Mean Importance of Team Organization	Mean Frequency of Team Instruction	Mean Importance of Team Instruction
Region				
1 (N=6)	2.54	2.77	3.21	3.37
2 (N=3)	2.27	2.14	2.83	3.36
3 (N=3)	2.86	2.69	2.69	2.88
4 (N=5)	1.85	2.15	3.06	3.33
5 (N=8)	2.32	2.53	2.93	3.21
6 (N=3)	2.14	2.22	2.65	2.83
7 (N=1)	2.52	2.67	2.71	2.90
Enrollment				
Low - 599 (N=3)	2.49	2.49	2.76	2.67
600 - 1702 (N=20)	2.33	2.50	3.01	3.27
1703 - High (N=6)	2.22	2.34	2.79	3.23
Sample Mean	2.32	2.46	2.94	3.20

TABLE 24

Interdisciplinary Team Organization and Interdisciplinary Team Instruction
By School Enrollment in Regions

	Mean Frequency of Team Organization	Mean Importance of Team Organization	Mean Frequency of Team Instruction	Mean Importance of Team Instruction
Region 1 Enrollment				
low - 599 (N=1)	2.43	2.71	3.00	3.00
600 - 1702 (N=5)	2.57	2.79	3.26	3.45
Region 2 Enrollment				
600 - 1702 (N=3)	2.27	2.14	2.83	3.36
Region 3 Enrollment				
low - 599 (N=1)	2.71	2.14	2.14	1.71
600 -1702 (N=1)	2.57	3.21	3.93	3.93
1703 - high (N=1)	3.29	2.71	2.00	3.00
Region 4 Enrollment				
600 -1702 (N=1)	1.50	1.86	3.10	3.21
1703 - high (N=4)	1.93	2.22	3.06	3.36
Region 5 Enrollment				
low - 599 (N=1)	2.32	2.61	3.14	3.29
600 -1702 (N=6)	2.32	2.54	2.96	3.25
1703 - high (N=1)	2.29	2.43	2.50	2.92
Region 6 Enrollment				
600 -1702 (N=3)	2.14	2.22	2.65	2.83
Region 7 Enrollment				
600 -1702 (N=1)	2.52	2.67	2.71	2.90

into the four hierarchical areas of Erb and Doda's (1989) model of interdisciplinary team development (Figure 2). The responses yielded a substantial amount of qualitative data as 68 (81.9%) of the teaming teachers took the opportunity to respond.

Question 1

"What are the best aspects of being on an interdisciplinary team and why?" (Appendix I). Responses occurred in three areas (in hierarchical order): Area 2, Interdisciplinary Team Relations, Area 3, Interdisciplinary Team Responsibilities, and Area 4, Interdisciplinary Team Instruction. No responses were made in the lowest level of team development, Area 1, Interdisciplinary Team Organization.

There were four responses based on activities in Area 2, Interdisciplinary Team Relations.

> "Sharing information on students, problems, solutions, etc... It gives you a better chance of reaching the student."
> "2X the discipline. I can handle individuals while other teaches."
> "Consistency with class rules, discipline plans. Team conferences with students and parents."
> "Team/student conferences."

The data from the survey (Table 20) indicated that only three schools had a higher mean for frequency and importance of activities in Area 2, Interdisciplinary Team Relationships, than Area 4, Interdisciplinary Team Instruction. This would account for the few responses in this area. As most schools were developmentally beyond Area 2, their best aspects of interdisciplinary team organization would lie in Areas 3 and 4.

There were comments from 35 teachers (42.2%) demonstrating activity in Area 3, Interdisciplinary Team Responsibilities. They reflected both teacher/teacher and teacher/student relations. Comments from teachers implied the feeling "You are not alone." Teachers were sharing ideas, problems, solutions, and information:

> "Having a comrade to offer support and alternate ideas gives teachers a strong feeling of professionalism."
>
> "Sharing students enables us to recognize early and handle quickly any potential academic and behavioral problems of the students."
>
> "Increased professional contact with colleagues allows greater access to students - better able to build rapport."
>
> "We have a greater sense of community with our students and ourselves."
>
> "It seems that the same students have problems in all classes. We are able to discuss problems some students are having in our classes. We have conferences with these students, and it has made a difference in our classroom. Their attitudes are better, and they do much better in and our classes after the conference."

There was also a sense that teaming teachers addressed the needs of students better than teachers who are not on teams.

> "I know my students better than I know my non-team students. I also know my fellow teachers very well. We can 'get under the kids' skin.'"
>
> "Teaming definitely addresses the needs of large student groups."
>
> "Get to know students better - feels like a large family."
>
> "Three people can do more to help a student than one can. Students appreciate a 'family approach.' We have consistency."
>
> "Teaming definitely addresses the needs of large student groups."

Comments from 44 teachers (53%) reflected activities in the highest level of Erb and Doda's interdisciplinary team development (Figure 2), Area 4, Interdisciplinary Team Instruction, addressing coordination of programs, reinforcement of ideas and content, and seeing the "big picture".

"Awareness of what each is doing so we can coordinate our program."

"Students benefit by making multiple connections between disciplines."

"Showing the students that the world operates on an interdisciplinary level."

"..cross-curriculum planning which leads to unity in the learning experiences for students."

"It helps to make 'things' make more sense for students. It is a more holistic approach to teaching - connections take place."

Teacher-to-teacher factors and planning together were also important.

"New teaching techniques are a possibility, which consequently means less 'burnout.'"

"We have fun together - teaching and planning new stuff."

"Flexibility - particularly in time."

"Chance for teachers to learn more about their partner's subject! This is great!"

"New strategies, no comfort zone - keeps us fresh, sometimes our own subject is boring."

The volume of responses increased with the increase in developmental level of the responses. The data on Table 20 showed most teams were at a high developmental level, which was reinforced by the responses about the best aspects of teaming. It is logical to assume that since these team teachers are at the highest developmental level of teaming, teaming is a positive force for these teachers.

Question 2

"What are the worst aspects of being on an interdisciplinary team and why?" (Appendix J). Eight teachers (9.6%) said there were no "worst" aspects of interdisciplinary teaming which indicates a high level of team development for them. However, 44 team teachers (53%) did have negative comments. The largest concern was time, with 17 teachers (20.5%) commenting on the lack of time due to the

demands of teaming. Comments occurred in all four areas of team organization.

In Area 1, Interdisciplinary Team Organization, the concerns concentrated on faculty and team members.

> "Negative perceptions by other faculty members."
> "Teachers are unique personalities and sometimes don't deal well together."
> "Learning to team teach is difficult, with two different teaching styles."
> "Being tied to another teacher is stifling my spontaneity in class."
> "Selfish behavior on the part of a team member, slacking off by team members."

Concerns in Area 2, Interdisciplinary Team Relations, focused on discipline and scheduling.

> "Not being able to 'reshuffle' kids within the team. Kids who are incompatible with each other must remain together or leave the team."
> "Having a schedule and a physical facility which is not conducive to meeting all students in a place at the same time."
> "Differences in grading policies and discipline matters."
> "Discipline seems to be inconsistent due to different styles."
> "Disciplinary problems with larger group of kids."

Solving problems and lack of funding were the concerns in Area 3, Interdisciplinary Team Responsibilities.

> "There are times when we disagree on how to approach a problem."
> "You feel compelled to change some of your tactics to comply with team policy."
> "Different approaches to classroom management."
> " Lack of funds for programs."
> "This is the first year of this, so we are lacking some critical funding from the county."

Planning time and teaching interdisciplinary units were the problems in Area 4, Interdisciplinary Team Instruction.

"Lack of true common planning. Too complex master schedule."

"Very little to no planning time - we had to struggle for a common planning period."

"Making sure we communicate with no common planning."

"Giving students benefit of three teachers experience and expertise is good. Sometimes one subject may be neglected - at other times it is difficult to integrate all three subjects and include all needed material."

"I wouldn't say it's the worst aspect but the most difficult - trying to coordinate and mesh the two disciplines."

Question 3

"Explain any activities that your interdisciplinary team is implementing that are not on the list above" (Appendix K). The suggestions were all in Area 4, Interdisciplinary Team Instruction, indicating a high level of team development. These 30 teachers (36.1%) had gone beyond the required interdisciplinary connections and were exploring additional ways of delivering instruction.

"We invite kids to eat lunch with us. We really get to know the kids."

"We produce portfolios and have a portfolio committee review the results."

"We do lots of...self-esteem, attitude, career sheets, college counseling, etc. - very personalized."

"Focus on multiple intelligences."

"Student projects are geared toward including all of the disciplines."

"...6 teachers sit on a committee and research interdisciplinary potential, attend conferences, etc."

"We have used cooperative learning techniques in the classroom with great success."

Coordinated field trips were mentioned by 8 teachers (9.6%).

Question 4

"Are there any other comments you would like to make on interdisciplinary teaming?" (Appendix L). Comments from 42 teachers (50.6%) were predominantly

positive, but there were some concerns as well.

Block scheduling was a negative to one teacher,

> "By the way, block schedule stinks,"

and a necessity for success to another,

> "Interdisciplinary teaching is so much better when each team teacher is teaching a team class at the same time. We can trade students or spend more time than normal on a particular subject or integrate more by having all teachers present. This is impossible if I teach a non-team class when my team wants to get together."

Phone interviews with principals of teaming schools (Appendix G) produced the same split results; two principals were implementing block schedule and liked it:

> "We implemented block scheduling which will help us implement more interdisciplinary teams."
> "The teachers like the flexibility of block scheduling."

while one principal had tried it and stopped due to poor teacher response:

> "In the past we alternated a daily block schedule. We didn't like it. It was a poor delivery for at-risk kids."

Other concerns were planning and teacher commitment. All three principals at teaming schools agreed that teachers should have inservice training on teaming techniques:

> "We did inservices on new techniques."
> "We received special funding for training and the teachers loved it."
> "We examined what was in the literature and took faculty suggestions on implementation."

needed team planning time:

> "Teachers love the extra planning time."

"Teachers do feel they need more planning time."

"It takes a great deal of planning to coordinate the teams. Teachers need more planning time."

and should want to be on a team:

"Teachers need to want to do this."
"Teachers need to want to team."
"The team teachers are all volunteers."

Teachers agreed:

"It is a great but need to be given support as in planning periods at same time."

"Excellent idea which requires a lot of time and planning."

"Teachers should never be assigned to a team."

"Teachers should develop it - not be told by administrators to do it. Teachers should not have more than two lesson plans."

"Lack of true common planning. Too complex a master schedule."

"It takes time and extra planning to make it effective. This year they took our extra planning away from us and often times it is difficult to meet regarding the team. Our time is largeley spent with individual planning."

Some specific subject problems arose in math and English. None of the principals interviewed included math on their teams due to scheduling problems. Two of the principals had teams of English and history:

"We have English/history teams but additional teaming is a disaster for the master schedule, especially math. There are too many different types of math taught at the same grade level."

"Our humanities block is conducive to teaming. We are looking at other subjects but not strongly, math scheduling is a problem. the 12th grade is not interested because they have too many single section classes."

and one principal had a team of English, science, and history:

"We are an International Baccalaureate School and all our average 9th graders are teamed using the middle school model. There are 340 kids on two teams of English, social studies, and science. There is no math due to the

schedule."

Teachers wrote:

> "The biggest stumbling block is the inability to fit math in. Last year we tried all levels of math together and it did not work. Parents and administrators want specific credits like Basic Algebra or Algebra 1 rather than just math 9 or Interdisciplinary Math."
>
> "Only three teachers on each team could be scheduled with common planning time: the science, social studies, and English teachers. More teachers, especially math teachers are needed on the team."

and two English teachers stated:

> "Planned units of study periodically work well; however, to avoid loss of content needed as preparation for grade 10, *regular* class periods are necessary. The English teacher must be more than just a writing instructor."
>
> "The interconnectedness of English and social studies enables students to learn information that if presented in a vacuum often eludes them."

Schools where teaming is new may have other problems, as stated by this teacher:

> "High school teachers in (name of school) have not been exposed to interdisciplinary teaching. Academic Tech is a new program and the staff has not been enthusiastic about team teaching - or Academic tech. Most prefer to control with sole responsibility for their required content area."

The principals at teaming schools stated interdisciplinary team organization was beneficial to the students and teachers:

> "There was a decreased failure rate."
> "The teachers like working together."
> "It is working very well. The teachers and students like it."

One principal felt that team teachers tended to be risk takers and liked to handle their own discipline more than regular classroom teachers:

"They are younger teachers but not inexperienced. They are risk takers."

Positive teacher comments expressed professional improvement,

"It's the best thing to happen to me professionally!"
"Great! The best thing to happen to me in 20 years of teaching."
"I go home everyday knowing I'm doing the right thing!"
"So far it has been fun. Also, it's been a challenge."

student improvement,

"In a large school students really benefit by not falling through the cracks. Life is much more flexible."
"Very helpful for students with problems who need consistency."
"Interdisciplinary teaming difficult, but rewarding in terms of student interest and achievement."
"I think that interdisciplinary learning is just good common sense. A team of teachers, willing to work together, can have a far greater impact on a student."
"We provide much positive reinforcement to give students a good beginning in high school."

and reflected the research results cited in Chapter 1, that interdisciplinary team organization is the best way to prepare students for the workplace.

"Everyone should do it. In a complex society with complex knowledge, simplistic and traditional teaching can't meet all needs. It's fun."
"Fragmented instruction must be a thing of the past and interdisciplinary teaching can ensure its demise."
"I would never want to go back to total soloing. Team teaching is wonderful for the student and for the teacher. Teachers must work together. After all, we are supposed to prepare our students to do what we do and what we should do - working together for a better product."
"I think interdisciplinary units and planning are not only helpful to the student but vital for proper understanding of the world."
"Our kids do better on standardized tests, *feel* prepared, come back from college, etc. It's unique in our school and really makes them feel special."

The research in Chapter 1 stated that a change in high school structure was necessary to help high school students be truly prepared citizens of the 21st century. Chapter 2 substantiated interdisciplinary team organization as the best vehicle for that change.

It provides an educational structure where they get the emotional, social, and intellectual challenges necessary to develop into productive adults. Teachers commented:

> "It helps to make 'things' make more sense for students. It is a more holistic approach to teaching - connections take place."
>
> "Total coordination and 'big picture' view of both curriculum and students makes content relevant to students."
>
> "Coordination, camaraderie, pulling the best from students through numbers."
>
> "We do lots of self-esteem, attitude, career planning, college counseling, etc. - very personalized."

Additionally, interdisciplinary team organization creates a supportive environment which increases academic achievement, improves behavior, improves teacher morale, and lowers teacher stress. The teachers agreed:

> "Students are the winners!"
>
> "Our kids do better on standardized tests, feel prepared, etc."
>
> "Sharing students enables us to recognize early and handle quickly any potential academic and behavioral problems of the students."
>
> "It is the most effective, sensible, realistic teaching I have done, and I have done some pretty good teaching in 11 years."
>
> "You're are not alone."
>
> "As a first year teacher working with a 14 year veteran, I have to say that the support I get is the best...my team-teacher is always there to help."

Summary

Analysis of the quantitative data indicates that interdisciplinary team organization is present in some Virginia high schools in all regions and enrollment groups. Principal's tenure in the school and enrollment are the only variables that seem to have an influence on the presence or absence of interdisciplinary team organization.

Interdisciplinary team organization is predominantly in 9th grade, using block scheduling, with English and history as the taught subjects. Interdisciplinary team teachers tend to have less high school experience, share heterogeneously grouped students and coordinate instruction with another teacher. Most interdisciplinary team teachers perceive interdisciplinary team instruction activities as implemented with more frequency and importance than interdisciplinary team organization activities.

Analysis of teachers' qualitative comments indicate that interdisciplinary team organization provides a better educational structure for high school students and an improved professional environment for teachers.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The world is experiencing rapid technological changes. High school students need an educational structure in which they can learn many things simultaneously and work with others to integrate that knowledge with present phenomena (Benjamin, 1989). Oxley (1989) suggests that large high schools create an unfavorable learning environment and recommends dividing existing schools into smaller groups. People seem to learn, change, and grow in situations in which they feel they have some control and personal influence; smaller groups, such as interdisciplinary teams, aid this process (Berlin and Cienkus, 1989; Sizer, 1986).

Interdisciplinary team organization has been successfully implemented in middle schools while high schools have traditionally maintained a departmentalized, subject-centered organization (Beane, 1990a). If high schools are to address the needs of today's students, they must be organized differently (Glines, 1989). Several researchers (Boyer, 1983; Cawelti, 1989; Goodlad, 1984; Sizer, 1984) recommend interdisciplinary team organization for high schools as a means of improving both academic and social skills of students. In addition, Sawyer (1991) found administrators, counselors, and core subject teachers at Virginia high schools with over 1,500 students indicated an overall acceptance of interdisciplinary team organization.

The purpose of this study was to determine the distribution of Virginia high schools with interdisciplinary team organization, how that organization was structured, and the frequency and importance of interdisciplinary team activities.

Summary of Findings

Research Question 1: What is the distribution of interdisciplinary team organization in a representative sample of the high schools in the Commonwealth?

Interdisciplinary team organization was present in 29 schools from all seven regions, in both cities and counties, and in all enrollment groups. The 67 surveyed schools were in the same approximate proportion by region, size, and city or county as the Commonwealth total of 205; however, the distribution of the 29 teaming schools was not. The data imply that the only variables which had an influence on the presence or absence of interdisciplinary team organization was the principal's tenure in the school and the size of the school.

The principal's tenure in the school emerged as the only significant variable ($p = 0.039$). All principals of schools with interdisciplinary team organization had less than ten years tenure at their school, with 76% having only one to five years. The tenure of 44.7% of the principal's of non-teaming schools was six years or more.

There was a nonsignificant trend for more middle and large schools than small schools to have interdisciplinary team organization. While teachers from small schools showed interest in interdisciplinary team organization, scheduling difficulties

and lack of staffing made it impractical. The larger the school, the more flexibility the scheduling and the more opportunities to implement interdisciplinary team organization.

Of the schools that had interdisciplinary team organization, there was a significant relationship between the shared team subjects and the demographics of the region ($p = 0.000$) and enrollment ($p = 0.007$). While none of the regions had all varieties of shared subjects, Region 1 had the most variety, with five different groups of shared subjects. Regions 3 and 7 only had two different groups of shared subjects. Medium sized schools in all regions (59% of total team schools) had teams in all the shared subjects.

Research Question 2: What is the structure of interdisciplinary team organization in Virginia high schools?

Interdisciplinary team teachers most frequently taught ($p = 0.000$) history (44.6%) and English (28.9%), while math was taught least frequently (9.6%). English/history was the most common team (48.2%) and the only team found at all grade levels. Interdisciplinary team organization was most prevalent at the 9th grade level (63.9%), with teams reporting all possible combinations of shared subjects.

Interdisciplinary team teachers tended to have less high school teaching experience ($p = 0.05$) than non-team teachers; shared students ($p = 0.06$); classes that were block scheduled ($p = 0.05$); coordinated instruction for at least one class with a teacher in another subject ($p = 0.02$); and taught classes that were heterogeneously

grouped (p= 0.01). Interdisciplinary teams teachers tended not to have two planning periods (p= 0.002). While not significant, a high percentage of department chairs met with the administration (93%); and most teams had been together 1-3 years (83%).

Research Question 3: How do Virginia high school teachers in interdisciplinary teams judge the frequency and importance of the various aspects of their team work and organization?

Six of the interdisciplinary team organization components had implementation and importance means above 2.95 in the frequent/very frequent to important/very important range:

3. We plan for new instructional techniques as a team.

11. Members of our team are aware of what is being taught in other team subjects.

15. We coordinate instructional units to overlap for reinforcement.

16. Each team member uses his/her own discipline structure and methods.

19. We share ideas about classroom problems and solutions.

24. We develop solutions to students' problems in our regular meetings.

Six of the interdisciplinary team organization components had implementation means of 2.5-2.9, indicating frequent implementation, with importance means above 3.0 in the important/very important range:

7. Our team has regularly scheduled meetings.

10. We plan interdisciplinary units.

13. We teach interdisciplinary units.

14. Our team teaches some basic skills (such as punctuation) in all team classes.

21. We discuss curriculum at regular meetings.

25. Team members share information learned at conferences or in graduate classes.

Four components had implementation and importance means of 2.5-2.9 in the frequent and important range:

2. Our team prepares as a team for parent/student conferences.

12. Students on our team each have at least one team member who knows the "total picture" of their grades, accomplishments, and problems.

17. We resolve our disputes in our regular meetings.

20. Our team discusses how we can improve our communication with each other.

Two questions which were negatively stated had low frequency means (1.53 and 1.57 respectively) which was the desired result:

8. Members of our team neglect to follow through on team decisions.

22. One member dominates team discussions.

Components of interdisciplinary team organization that had implementation and importance means less than 2.5 and were therefore infrequently to never implemented

and unimportant or not applicable were:

1. Our team keeps copies of meeting agenda.

4. Members of our team ask other members to observe their classes and provide feedback.

5. Our team has a member who keeps minutes of our meetings.

6. We take our students on team outings.

9. Our team decides as a group how to spend team funds.

18. Our team has a member represent all members when making calls to parents.

23. We plan as a team for staff development.

26. We hold student recognition events.

27. We reschedule students within the team as the need arises.

28. One member of our team is responsible for coordinating with non-team teachers who share our students.

The 28 components were arranged in the four areas of Erb and Doda's (1989) hierarchal model of interdisciplinary team development with organization components at the beginning level of development and instruction components at the advanced level. Components of Area 1, Interdisciplinary Team Organization, had frequency means between 2.5-2.9, importance means between 2.5-3.03, and two questions with frequency and importance means less than 2.5. All of the components of Area 4, Interdisciplinary Team Instruction, had importance means above 3.0 and frequency

means above 2.5.

The majority of schools implementing interdisciplinary team organization (79.3%) had higher means for frequency and importance of interdisciplinary team components in Area 4, Interdisciplinary Team Instruction, than Area 1, Interdisciplinary Team Organization. Area 4, Interdisciplinary Team Instruction, components had a higher frequency mean than Area 1, Interdisciplinary Team Organization, components in 23 schools and they had a higher importance mean in 25 schools. Schools in Regions 2 and 3 had higher frequency means than importance means in Area 1, Interdisciplinary Team Organization. Schools in all regions showed higher importance than frequency means in Area 2, Interdisciplinary Team Relations, Area 3, Interdisciplinary Team Responsibilities, and Area 4, Interdisciplinary Team Instruction.

Region and enrollment had a significant effect ($p = 0.035$) on teacher responses to the importance of Area 4, Interdisciplinary Team Instruction. Medium sized schools in five of the seven regions had importance means above the sample mean. The importance of Area 4, Interdisciplinary Team Instruction, was also significantly affected by team grade ($p = 0.053$) and teaching subject ($p = 0.007$) with 10th and 11th grade as well as science and mathematics teachers having higher importance means than the sample mean.

Conclusions

The purpose of this study was to provide base-line data on interdisciplinary team organization in Virginia high schools. While the study begins to answer the three research questions, it raises others which cannot be answered by this study but still need to be asked. The only working definitions of interdisciplinary team organization, that have been researched, are those that apply to middle school. While this study had no desire to compare middle school interdisciplinary team organization to high school interdisciplinary team organization, that has become inescapable.

The one common theme about the high school interdisciplinary teams, team teachers, and principals' tenure was that they were all relatively new to the position. Most teams were together 1-3 years and teaming teachers had been teaching in high school less than 10 years. All teaming schools' principals had been at their schools for less than 10 years and 76% of them had been there five years or less. This poses interesting questions: Why do team teachers and principals have fewer years of high school experience? Are they younger than their counterparts, less jaded due to less high school experience, risk takers, or more flexible people in general and therefore more willing to try new techniques? Do the teachers and principals of teaming schools perceive interdisciplinary team organization as a personal benefit or an enhancement to their careers?

Comments from principals at schools with interdisciplinary team organization indicate that team teachers tend to be risk takers, like the flexibility of block

scheduling, and are young but not inexperienced. Team teachers' comments reflect that they like to work with others, like to learn new techniques, and like the increased professional contact with colleagues. One teacher wrote, "Great! The best thing that has happened to me in 20 years of teaching." Teachers also felt that the team approach strengthens the curriculum, makes learning more fun, reinforces skills, and is a better use of time. Many teachers expressed the same view as the researchers in Chapter 2:

> "It reflects the fact that knowledge and experience are a whole, not fragmented."
>
> "Everyone should do it. In a complex society with complex knowledge, simplistic and traditional teaching can't meet all needs."
>
> "I think interdisciplinary units and planning are not only helpful to the student but vital for proper understanding of the world."

It would seem that attitude, attitude about others, the curriculum, and teaching, plays the biggest role in team teacher participation and success. There is no information on the principals, therefore further research is necessary.

High school interdisciplinary team organization was distributed across all regions of Virginia, in cities and counties, and in all size schools. All regions had teams with at least two different groupings of teamed subjects. Medium and large size schools had more flexibility in scheduling and were therefore more likely to implement interdisciplinary team organization.

While there were teams at all grade levels with a variety of teamed subjects, the structure of the majority of interdisciplinary teams tended to be at the ninth grade

level with English/history as the teamed subjects. This causes one to question if the majority of teams are at the ninth grade level because they are following the middle school model or because that is really the most convenient grade to team. Most team teachers shared heterogeneously grouped students in one or two classes that were block scheduled. Ninth grade has the fewest possible subject combinations which makes the scheduling of teams easier. Both principals and teachers found the biggest problem with organizing teams was the scheduling. The master schedule, single subject classes, and teachers who teach multiple subjects make teaming very difficult, especially at small schools. While team teachers coordinated instruction with at least one other teacher and shared planning time with another teacher, most did not have two planning periods, one for personal and one for team planning. Both teachers and principals cited this as a disadvantage; enough planning time was the one element of interdisciplinary team organization that was missing for most teams.

The aspects of interdisciplinary team organization that were being implemented were:

- Planning instruction techniques and overlapping units
- Sharing classroom problems and solutions with no individual dominating the discussion
- Being aware of what is taught in other team subjects
- Following through on team decisions
- Developing solutions to students' problems

- Scheduling regular team meetings
- Planning and teaching interdisciplinary units and basic skills
- Sharing new information
- Discussing curriculum issues
- Preparing for parent/student conferences
- Resolving disputes
- Having at least one team member know the "total picture" of grades, accomplishments, and problems for each student.

There were many aspects of interdisciplinary team organization that were supported by research (Figure 1) but were not found important by most of the high school team teachers:

- Uniform discipline techniques
- Meeting agendas and minutes
- Peer observation
- Planning for staff development
- Student outings
- Team/parent phone calls
- Spending of team funds
- Student recognition events
- Student rescheduling within the team
- Team coordination with non-team teachers

Gibson's (1992) research found even exemplary interdisciplinary teams did not utilize uniform discipline techniques, peer observation, team plans for staff development, student rescheduling, or coordination with non-team teachers. Due to the developmental age difference between middle school and high school students it is necessary to determine which interdisciplinary team components are really necessary to adequately implement interdisciplinary team organization at the high school level. Additionally, the variety of possible courses makes coordination with non-team teachers and the rescheduling of students difficult in a high school setting. More research needs to be done to define the specific elements of high school interdisciplinary teaming as opposed to the established components of middle school interdisciplinary teaming. It would seem that there are some middle school interdisciplinary activities that may not be appropriate for high school students.

When grouped into Erb and Doda's (1989) four hierarchical areas of interdisciplinary team development (Figure 2), the components of the highest level of team development, Area 4, Interdisciplinary Team Instruction, had the most importance and frequency. While the results of this study do show a trend toward a hierarchical development of interdisciplinary team activities for middle and large sized schools it does not apply for all schools especially small schools. However, Erb and Doda's hierarchical developmental model was also based primarily on middle school interdisciplinary team organization. When further research determines the specific elements of high school interdisciplinary team organization, it will be necessary to

determine if those elements fit the Erb and Doda developmental model. At that time the following questions will have to be addressed: Are the activities themselves developmental or do they address the specific developmental needs of middle school students more than high school students? Are high school students at a higher level of development than middle school students and therefore are the activities in the lower developmental levels of Erb and Doda's model not necessary for high school interdisciplinary team organization? Is the high school with its varied subject selection, single subject sections, and college preparatory curriculum conducive to an interdisciplinary team structure? Do high school and middle school teachers have the same educational philosophy or are their philosophies divergent? Therefore, is the Erb and Doda model valid for high schools or should there be a new developmental model to fit the specific needs of high school interdisciplinary organization? The results of this study would seem to indicate that a new definition should be formed for the components and developmental levels of high school interdisciplinary team organization.

Recommendations for Further Research

This study provided base-line data on the distribution, structure, and components of interdisciplinary team organization in a random sample of Virginia high schools. These findings can be used as the basis for further study on the state of interdisciplinary team organization in Virginia high schools. Due to the small number

of responding schools, the other 138 Virginia high schools should be surveyed to add data on the state of interdisciplinary team organization in Virginia.

While the survey results serve as base-line data for further research, the small number of responding schools (67/123) prohibits the data from being generalized over the Commonwealth. Schools did not participate in the survey for a variety of reasons: some were changing administrators and therefore unwilling to commit to a big project; some were "surveyed out;" some needed permission from the central office; some just said no; and others did not respond at all. This raises the question of why did the non-teaming schools choose to reply and why did the non-responding schools not reply? What was different about the non-teaming schools that prompted them to reply?

This also leads to the question of why all the teachers surveyed did not respond. Did the department chairs give out the surveys with the proper instructions, in a timely manner, and with a recommendation for completion/non-completion? Did the non-responding teachers not respond because they lost the survey, were afraid of being identified, or just overwhelmed with work? These concerns should be addressed before doing further research.

This study addressed the teachers' perceptions of the frequency and importance of interdisciplinary team components, however, a follow-up study should be conducted to assess the students' perceptions of the frequency and importance of interdisciplinary team activities. Some team teachers commented that students felt teams treated them

immaturely, were physically confining, and intrusive:

> "Some students feel they are being treated more like middle school students than high school and don't care for the overlapping of material."
>
> "It is too confining. The students are kept in one basic area for the greater part of the day. They do not get acquainted with other faculty members in the building."
>
> "Sometimes the students tire out from seeing us and knowing we are a team. They react negatively when the English teacher says something to them about how they behave in the math class and vice versa."

Longitudinal studies should be conducted in high schools which are implementing interdisciplinary team organization to determine the continuity of the frequency and importance of interdisciplinary team components, the integrity of the team structure, and the number of teams present. This would determine if the components of high school interdisciplinary team organization remain the same or change as the interdisciplinary teams progress in development. It would also contribute to the research on the identification of the specific components of high school interdisciplinary team organization.

The research experts' definition of interdisciplinary team organization (Figure 1) contained 12 similar elements. These elements were neither all present nor were they all important to high school interdisciplinary team organization. As the expert's research applied primarily to middle school interdisciplinary organization, further research is necessary to determine the specific elements of high school interdisciplinary team organization.

This study is just the beginning of research into the structure and components

of high school interdisciplinary organization. It has raised as many questions as it has answered. However, it does produce compelling testimony from teachers and principals that those who are implementing it feel it is successful, and beneficial for teachers and students.

Elementary and middle schools have implemented interdisciplinary team organization to address the diverse needs of students in today's society. High schools must join them and be concerned with more than just a student's academic prowess. High schools must define their own version of interdisciplinary team organization, and implement it, in order for today's students to be productive, interactive, as well as well-educated, citizens of tomorrow.

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APPENDIX A

Counties and Cities of Sample Schools by Region

1	2	3	4	5	6	7
Buckingham County	Accomack County	Gloucester County	Arlington County	Albemarle County	Alleghany Highlands County	Bristol City
Charlotte County	Chesapeake City	King William County	Clarke County	Amherst County	Botetourt County	Buchanan County
Chesterfield County	Hampton City	Lancaster County	Fairfax County	Augusta County	Franklin County	Galax City
Colonial Heights City	Newport News City	Northumber-land County	Frederick County	Bedford County	Henry County	Lee County
Cumberland County	Norfolk City	Spotsylvania County	Loundon County	Buena Vista City	Martinsville City	Pulaski County
Dinwiddie County	Northampton County	Stafford County	Manassas Park City	Campbell County	Montgomery County	Radford City
Greensville County	Poquoson County	Westmoreland County	Orange County	Charlottes-ville City	Pittsylvania County	Russell County
Halifax County	Portsmouth City		Prince William County	Harrisonburg City	Roanoke City	Smyth County
Hanover County	Southampton County		Shenandoah County	Louisa County	Roanoke County	Tazewell County
Henrico County	Suffolk City		Winchester City	Nelson County	Salem City	Washington County
Lunenburg County	Virginia Beach City			Rockbridge County		
Mecklenburg County	York County			Rockingham County		
New Kent County				Staunton City		
Nottoway County				Waynesboro City		
Petersburg City						
Richmond City						

APPENDIX B

Survey of Interdisciplinary Team Organization in Virginia High Schools

PLEASE HELP! As part of a doctoral dissertation at Virginia Polytechnic Institute and State University, I am studying the implementation of interdisciplinary team organization in Virginia high schools. I will be focusing on the frequency, components and importance of interdisciplinary team organization. Your principal is allowing your school to be one of 123 randomly selected Virginia high schools participating in my study.

I have asked your department chair to distribute a survey to each teacher in your department. Please take about 20 minutes to complete this survey and return it in the attached envelope. It is important that you respond to each question as objectively as possible. There are no "right" answers. Select the responses that most closely reflect the current conditions in your school.

Your response will be strictly confidential. Names and specific information about schools or teams will not be published in the report nor will they be shared with your school. A final report of the findings will be sent to your school on request.

Please feel free to contact me at (703) 323-8538 if you have any questions. Leave your name, evening phone number and a brief question. **Thank you very much for your help with this project.**

Please return by October 15, 1994.

Sincerely,
Susan H. Benezra

Section I

This section is designed to give information about you and your school. **Please circle or enter the best response.**

a. In which grade levels and subjects are you certified?

Elementary K-4 Middle 4-8
Secondary
History Mathematics
Science English
Other_____

b. What is your highest education level?
Bachelors Masters
Masters +30 Ed.D/Ph.D.
Certificate of Advanced Graduate Studies

c. Are you department chair?
YES NO

d. How many students are enrolled in your school?
0-500 501-1000 1001-1500 1501-2000
2001-2500 2501-3000 3001+

e. Please specify your precise content area for the 94-95 school year within the broad fields below (ie Sci-Bio,Math-Alg I, Eng-Journalism,SSAm.Hist)
Science _____ Mathematics _____
English _____ History_____
Other_____

f. How many **total years** of teaching experience do you have?
1-5 6-10 11-15 16-20 21-25 26-30 31+

g. How many years of **high school** teaching experience do you have?
1-5 6-10 11-15 16-20 21-25 26-30 31+

h. How many years have you been teaching **in this school**?
1-5 6-10 11-15 16-20 21-25 26-30 31+

i. How long has your **principal** been at your school?
1-5 6-10 11-15 16-20 21-25 26-30 31+

Section II This section is designed to give information about teaming in your school. **Please circle or enter the best response.**

a. How many teachers in your department share the same students and daily planning time with a teacher in another subject area?
0 1 2 3 4 5 6 7 8 9 10

b. Do the department chairs, as a group, have regularly scheduled meetings with the administration? YES NO

c. Do the team leaders and department chairs have regularly scheduled meetings together?
YES NO

d. How many teachers in your department coordinate instruction (team teach) at least one class with a teacher in another subject area?
0 1 2 3 4 5 6 7 8 9 10

e. Do the team leaders, as a group, have regularly scheduled meetings with the administration?
YES NO

f. What percentage of students in each grade level in your school are assigned to teams?
9th None 1-25% 26-50% 51-75% 76-100%
10th None 1-25% 26-50% 51-75% 76-100%
11th None 1-25% 26-50% 51-75% 76-100%
12th None 1-25% 26-50% 51-75% 76-100%
DON'T KNOW

g. If your school discontinued interdisciplinary teaming, please explain why it did not work.

_____

h. Do **YOU** share the same students and daily planning time with a teacher in another subject area?
NO YES Your subject area and grade level _____
Shared subject area(s)and grade level_____

IF YOUR ANSWER TO "h" IS NO PLEASE STOP HERE AND RETURN THE SURVEY IN THE ATTACHED ENVELOPE.

Section III This section is designed to gather information about your team. **Please circle or enter the best response.**

a. Are you the team leader?
YES NO

b. **Specify the precise subjects** that are represented on your team (ie Sci - Bio, Math - Alg I)
Science_____ Mathematics_____
English_____ History_____
Other_____

c. Are all teachers on your team responsible for teaching the same group of students? YES NO

d. How many years has your current team been together? 1 2 3 4 5 6 7 8 9 10

e. Does your team have block scheduling?
YES NO

f. How many students are on your team?
0-30 31-60 61-90 91-120 121-150 151+

g. How many teachers are on your team?
1 2 3 4 5 6 7 8

h. Do you have two daily planning periods, one for team planning and one for individual planning?
YES NO

i. Please indicate the number of teachers on your team who have been a member of your team for
1 Year _____ 2 Years _____
3 Year_____ 4 Years _____
5 Years_____ 6 years___

j. How are the students on your team grouped?
Heterogeneously (mixture of abilities)_____
Homogeneously (same ability group)_____
Describe the homogeneous group:_____

Section IV This section is designed to indicate the frequency and importance of the activities of your team. **Please circle the answer which best describes your team.**

How **frequently** is your team involved in each activity? 1=Never 2=Infrequently 3=Frequently 4=Very Frequently		How **important** is each activity to your team? 1=Not Applicable 2=Unimportant 3=Important 4=Very Important
1 2 3 4	1. Our team keeps copies of meeting agendas.	1 2 3 4
1 2 3 4	2. Our team prepares as a team for parent/student conferences.	1 2 3 4
1 2 3 4	3. We plan for new instructional techniques as a team.	1 2 3 4
1 2 3 4	4. Members of our team ask other members to observe their classes and provide feedback.	1 2 3 4
1 2 3 4	5. Our team has a member who keeps minutes of our meetings.	1 2 3 4
1 2 3 4	6. We take students on team outings.	1 2 3 4
1 2 3 4	7. Our team has regularly scheduled meetings.	1 2 3 4
1 2 3 4	8. Members of our team neglect to follow through on team decisions.	1 2 3 4
1 2 3 4	9. Our team decides as a group how to spend team funds.	1 2 3 4
1 2 3 4	10. We plan interdisciplinary units.	1 2 3 4
1 2 3 4	11. Members of our team are aware of what is being taught in other team subjects.	1 2 3 4
1 2 3 4	12. Students on our team each have at least one team member who knows the "total picture" of their grades, accomplishments, and problems.	1 2 3 4
1 2 3 4	13. We teach interdisciplinary units.	1 2 3 4
1 2 3 4	14. Our team teaches some basic skills (such as punctuation) in all team classes.	1 2 3 4
1 2 3 4	15. We coordinate instructional units to overlap for reinforcement.	1 2 3 4
1 2 3 4	16. Each team member uses his/her own discipline structure and methods.	1 2 3 4

How **frequently** is your team involved in each activity? 1=Never 2=Infrequently 3=Frequently 4=Very Frequently		How **important** is each activity to your team? 1=Not Applicable 2=Unimportant 3=Important 4=Very Important
1 2 3 4	17. We resolve our disputes in our regular meetings.	1 2 3 4
1 2 3 4	18. Our team has a member represent all members when making calls to parents.	1 2 3 4
1 2 3 4	19. We share ideas about classroom problems and solutions.	1 2 3 4
1 2 3 4	20. Our team discusses how we can improve our communication with each other.	1 2 3 4
1 2 3 4	21. We discuss curriculum at regular meetings.	1 2 3 4
1 2 3 4	22. One member dominates team discussions.	1 2 3 4
1 2 3 4	23. We plan as a team for staff development.	1 2 3 4
1 2 3 4	24. We develop solutions to students' problems in our regular meetings.	1 2 3 4
1 2 3 4	25. Team members share information learned at conferences or in graduate classes.	1 2 3 4
1 2 3 4	26. We hold student recognition events.	1 2 3 4
1 2 3 4	27. We reschedule students within the team as the need arises.	1 2 3 4
1 2 3 4	28. One member of our team is responsible for coordinating with non-team teachers who share our students.	1 2 3 4

PLEASE FEEL FREE TO CONTINUE ON THE BACK WHEN RESPONDING TO THE FOLLOWING SERIES OF QUESTIONS:

1) WHAT ARE THE BEST ASPECTS OF BEING ON AN INTERDISCIPLINARY TEAM AND WHY?

2) WHAT ARE THE WORST ASPECTS OF BEING ON AN INTERDISCIPLINARY TEAM AND WHY?

3) EXPLAIN ANY ACTIVITIES THAT YOUR INTERDISCIPLINARY TEAM IS IMPLEMENTING THAT ARE NOT ON THE LIST ABOVE.

4) ARE THERE ANY OTHER COMMENTS YOU WOULD LIKE TO MAKE ON INTERDISCIPLINARY TEAMING?

THANK YOU VERY MUCH FOR COMPLETING THIS SURVEY. PLEASE RETURN IT IN THE ATTACHED STAMPED ADDRESSED ENVELOPE.

APPENDIX C

Survey Questions in the Four Areas of Erb and Doda's Model of Interdisciplinary Team Organization

Area 1:	Interdisciplinary Team Organization
1	Our team keeps copies of meeting agendas.
5	Our team has a member who keeps minutes of our meetings.
7	Our team has regularly scheduled meetings.
8	Members of our team neglect to follow through on team decisions.
17	We resolve our disputes in our regular meetings.
20	Our team discusses how we can improve our communication..
22	One member dominates team discussion.
Area 2:	Interdisciplinary Team Relations
2	Our team prepares as a team for parent/student conferences.
6	We take students on team meetings.
16	Each team member uses his/her own discipline structure and methods.
24	We develop solutions to students' problems in our regular meetings.
26	We hold student recognition events.
27	We reschedule students within the team as the need arises.
28	One member of our team is responsible for coordinating with.
Area 3:	Interdisciplinary Team Responsibilities
4	Members of our team ask other members to observe their classes and provide feedback.
9	Our team decides as a group how to spend team funds.
12	Students on our team each have at least one team member who knows the "total " picture of their grades, accomplishments, and problems.
18	Our team has a member represent all members when making calls to parents.
19	We share ideas about classroom problems and solutions.
23	We plan as a team for staff development.
25	Team members share information learned at conferences or in graduate classes.

APPENDIX C (continued)

Survey Questions in the Four Areas of Erb and Doda's Model of Interdisciplinary Team Organization

Area 4: Interdisciplinary Team Instruction

3 We plan for new instructional techniques as a team.
10 We plan interdisciplinary units.
11 Members of our team are aware of what is being taught in other team subjects.
13 We teach interdisciplinary units.
14 Our team teaches some basic skills in all team classes.
15 We coordinate instructional units to overlap for reinforcement.
21 We discuss curriculum at regular meetings.

APPENDIX D

Susan Horner Benezra
4786 Tapestry Drive
Fairfax, Virginia 22032

PRINCIPAL
SCHOOL NAME
SCHOOL ADDRESS
CITY, VIRGINIA ZIP
June 27,1994

Dear (Principal):

I need your HELP. As part of a doctoral dissertation at Virginia Polytechnic Institute and State University, I am studying interdisciplinary team organization in Virginia high schools. (School name) High School was one of 123 high schools selected at random from all high schools in Virginia. (School name) High School's contribution can be valuable to this study. Please be assured that all data will remain confidential and that names of individuals and schools will not be included in the final report.

For the purposes of this research, I would like to survey all core subject teachers in your school whether or not they are presently on an interdisciplinary team. The surveys and stamped return envelopes will be sent in September to the core subject department chairs for distribution to the teachers in their departments. Time required to complete the survey should be about 20 minutes.

In addition, I would appreciate your completing and signing the short survey at the bottom of this letter and returning it in the attached envelope by July 15. It will facilitate the distribution of surveys to your teachers.

Your assistance will be significant in my study and I offer sincere appreciation to you and your staff for your time and cooperation in assisting me in this study. A final report of the findings will be sent to your school on request.

Sincerely,
Susan H. Benezra

My school _____ will participate in the survey.
(signed) _____

Number of English Teachers_____	Department Chair _____
Number of Mathematics Teachers ____	Department Chair_____
Number of Science Teachers _____	Department Chair _____
Number of Social Studies Teachers ___	Department Chair _____

APPENDIX E

Susan Horner Benezra
4786 Tapestry Drive
Fairfax, Virginia 22032

PRINCIPAL
SCHOOL NAME
SCHOOL ADDRESS
CITY, VIRGINIA ZIP
July 26, 1994

Dear (Principal):

Two weeks ago I corresponded with you in regard to assisting me with a doctoral dissertation dealing with interdisciplinary team organization in Virginia high schools. I understand that the demands of your position and this particularly busy time of year may have made an immediate reply difficult. However, without the assistance of schools like yours the research will not be complete.

I need your HELP. Please be assured that all data will remain confidential and that names of individuals and schools will not be included in the final report. For the purposes of this research, I would like to survey all core subject teachers in your school whether or not they are presently on an interdisciplinary team. The surveys and stamped return envelopes will be sent in September to the core subject department chairs for distribution to the teachers in their departments. Time required to complete the survey should be about 20 minutes.

I would appreciate your completing and signing the short survey at the bottom of this letter and returning it in the attached envelope by August 15. It will facilitate the distribution of surveys to your teachers.

Your assistance will be significant in my study and I offer sincere appreciation to you and your staff for your time and cooperation in assisting me in this study. A final report of the findings will be sent to your school on request.

Sincerely,
Susan H. Benezra

My school _____ will participate in the survey.
(signed) _____

Number of English Teachers_____	Name of Department Chair _____
Number of Mathematics Teachers ____	Name of Department Chair_____
Number of Science Teachers _____	Name of Department Chair _____
Number of Social Studies Teachers ___	Name of Department Chair _____

APPENDIX F

Susan Horner Benezra
4786 Tapestry Drive
Fairfax, Virginia 22032

(SUBJECT) DEPARTMENT CHAIRPERSON
SCHOOL NAME
SCHOOL ADDRESS
CITY, VIRGINIA ZIP
September 24, 1994

Dear Department Chairperson,

As part of a doctoral dissertation at Virginia Polytechnic Institute and State University, I am studying interdisciplinary team organization in Virginia high schools. (school name) school was one of 123 high schools selected at random from all high schools in Virginia and (Principal's name) has consented for your department to participate. Your contribution will be valuable to this study.

As core subject teachers, your contributions are the basis for this study. The information you provide will help educators gain insight on the distribution, components and importance of interdisciplinary team organization in Virginia high schools. Please be assured that all data will remain confidential and that names of individuals or specific schools will not be included in the final report. A final report of the findings will be sent to your school on request.

Because of your position as department chairperson, I am requesting that you distribute a survey and pre-stamped return envelope to the teachers in your department. Time required to complete the survey should be about 20 minutes.

Please feel free to contact me if you have questions. My evening number is (703) 323-8538.

I appreciate your participation and that of your department in helping me obtain an accurate description of interdisciplinary team activities in Virginia high schools.

Sincerely,

Susan H. Benezra

APPENDIX G

Principals' Phone Interviews

1. What type of organizational structure does your Middle/Junior high school feeder school use?

All the principals reported that their feeder schools had interdisciplinary team organizational structure.

2. Was research conducted as to the benefits of high school interdisciplinary team organization? Results?

Non-teaming Principals:

> A committee is looking into it. No results yet.
>
> No, because we have no plans to implement it at this time.
>
> No. It is not feasible at this time.

Teaming Principals:

> Using the 9th grade middle school model. It is working very well. The teachers and students like it.
>
> We are looking at alternative educational strategies. We are just starting teaming and block scheduling.
>
> We examined what was in the literature and took faculty suggestions on implementation.

APPENDIX G (continued)

Principals' Phone Interviews

3. Was interdisciplinary teaming piloted before it was implemented? Results?

Non-teaming Principals:

We tried science/geography and art/English but it was not contagious. The teachers plan one or two projects each year that involve other disciplines but there is no formal teaming. We have no plans to implement it in the future.

No, we are not planning on implementing it at this time.

No. We are a small school and our schedule does not allow it. Too many teachers teach several subjects.

Teaming Principals:

We did inservices on new techniques but did not pilot a program.

We received special funding for training and the teachers loved it.

We are developing it now and are working toward a four subject team. Now it is just an English/history combo.

Questions for Teaming Principals:

4. What are the best/worst aspects of interdisciplinary teaming?

In the past we alternated a daily block schedule. We didn't like it. It was a poor delivery for at-risk kids. We are an International Bacheloriate School and all our average 9th graders are teamed using the middle school model. There are 340 kids on two teams of English, social studies, and science. There is no math due to the schedule. We are going to establish 10th grade teams in 1996. Teachers love the extra planning time.

There was a decreased failure rate. The teachers like the flexibility of block scheduling. Teachers do feel they need more planning time.

We implemented block scheduling which will help us implement more interdisciplinary teams. Now we just have English/history. We are working toward four subject teams. It takes a great deal of planning to coordinate the teams but the teachers like working together.

5. If everyone in the school is not doing teaming, why not?

The team teachers are volunteers. They are younger teachers but not inexperienced. They are risk takers. They like to handle their own discipline.

Our humanities block is conducive to teaming. We are looking at other subjects but not strongly, math scheduling is a problem. The 12th grade is not interested because they have too many single section classes. Teachers need to want to do this.

We have English/history teams but additional teaming is a disaster for the master schedule, especially math. There are too many different types of math taught at the same grade level. Teachers need more planning time and teachers need to want to team.

APPENDIX H

Raw Scores of Interdisciplinary Team Activities

Interdisciplinary Team Activity	Frequency of Activity (N=83)				Importance of Activity (N=79)			
	Never N %	Infrequently N %	Frequently N %	Very Frequently N %	Not Applicable N %	Unimportant N %	Important N %	Very Important N %
1. Our team keeps copies of meeting agendas.	35 42.2%	17 20.5%	13 15.7%	18 21.7%	26 32.9%	23 29.1%	18 22.8%	12 15.2%
2. Our team prepares as a team for parent/student conferences.	15 18.1%	25 30.1%	18 21.7%	25 30.1%	10 12.7%	14 17.7%	33 41.8%	22 27.8%
3. We plan for new instructional techniques as a team.	5 6.0%	17 20.5%	37 44.6%	24 28.9%	4 5.1%	6 7.6%	43 54.4%	26 32.9%
4. Members of our team ask other members to observe their classes and provide feedback.	34 41.0%	31 37.3%	9 10.8%	9 10.8%	22 27.8%	21 26.6%	25 31.6%	11 13.9%
5. Our team has a member who keeps minutes of our meetings.	49 59.0%	7 8.4%	10 12.0%	17 20.5%	37 46.8%	16 20.3%	15 19.0%	11 13.9%
6. We take students on team outings.	20 24.1%	35 42.2%	19 22.9%	9 10.8%	14 17.7%	9 11.4%	38 48.1%	18 22.8%
7. Our team has regularly scheduled meetings.	15 18.1%	14 16.9%	23 27.7%	31 37.3%	13 16.5%	6 7.6%	26 32.9%	34 43.0%
8. Members of our team neglect to follow through on team decisions.	45 54.2%	32 38.6%	6 7.2%		29 36.7%	7 8.9%	25 31.6%	18 22.8%
9. Our team decides as a group how to spend team funds.	38 45.8%	7 8.4%	17 20.5%	21 25.3%	36 45.6%	2 2.5%	23 29.1%	18 22.8%
10. We plan interdisciplinary units.	6 7.2%	25 30.1%	31 37.3%	21 25.3%	5 6.3%	2 2.5%	40 50.6%	32 40.5%
11. Members of our team are aware of what is being taught in other team subjects.	6 7.2%	12 14.5%	30 36.1%	35 42.2%	3 3.8%	3 3.8%	36 45.6%	37 46.8%
12. Students on our team each have at least one team member who knows the "total picture" of their grades, accomplishments, and problems.	20 24.1%	21 25.3%	18 21.7%	24 28.9%	17 21.5%	7 8.9%	29 36.7%	26 32.9%
13. We teach interdisciplinary units.	7 8.4%	23 27.7%	28 33.7%	25 30.1%	5 6.3%	2 2.5%	42 53.2%	30 38.0%

APPENDIX H (continued)
Raw Scores of Interdisciplinary Team Activities

Interdisciplinary Team Activity	Frequency of Activity (N=83)				Importance of Activity (N=79)			
	Never N %	Infrequently N %	Frequently N %	Very Frequently N %	Not Applicable N %	Unimportant N %	Important N %	Very Important N %
14. Our team teaches some basic skills (such as punctuation) in all team classes.	9 11.0%	19 23.2%	32 39.0%	22 26.8%	7 8.9%	5 6.3%	39 49.4%	28 35.4%
15. We coordinate instructional units to overlap for reinforcement.	3 3.6%	18 21.7%	37 44.6%	25 30.1%	3 3.8%	4 5.1%	38 48.1%	34 43.0%
16. Each team member uses his/her own discipline structure and methods.	8 9.6%	12 14.5%	29 34.9%	34 41.0%	11 13.9%	8 10.1%	34 43.0%	26 32.9%
17. We resolve our disputes in our regular meetings.	9 10.8%	19 22.9%	27 32.5%	28 33.7%	22 27.8%	7 8.9%	22 27.8%	28 35.4%
18. Our team has a member represent all members when making calls to parents.	29 34.9%	24 28.9%	13 15.7%	17 20.5%	25 31.6%	17 21.5%	20 25.3%	17 21.5%
19. We share ideas about classroom problems and solutions.	2 2.4%	5 6.0%	21 25.3%	55 66.3%	1 1.3%	2 2.5%	23 29.1%	53 67.1%
20. Our team discusses how we can improve our communication with each other.	16 19.3%	22 26.5%	24 28.9%	21 25.3%	13 16.5%	10 12.7%	33 41.8%	23 29.1%
21. We discuss curriculum at regular meetings.	13 15.7%	12 14.5%	31 37.3%	27 32.5%	9 11.4%	8 10.1%	34 43.0%	28 35.4%
22. One member dominates team discussions.	43 52.4%	31 37.8%	8 9.8%		38 48.7%	21 26.9%	11 14.1%	8 10.3%
23. We plan as a team for staff development.	37 44.6%	22 26.5%	15 18.1%	9 10.8%	32 40.5%	11 13.9%	26 32.9%	10 12.7%
24. We develop solutions to students' problems in our regular meetings.	4 4.8%	14 16.9%	36 43.4%	29 34.9%	7 8.9%	3 3.8%	34 43.0%	35 44.3%
25. Team members share information learned at conferences or in graduate classes.	8 9.6%	19 22.9%	31 37.3%	25 30.1%	6 7.6%	7 8.9%	42 53.2%	24 30.4%
26. We hold student recognition events.	26 31.3%	28 33.7%	21 25.3%	8 9.6%	18 22.8%	9 11.4%	35 44.3%	17 21.5%

APPENDIX H (continued)
Raw Scores of Interdisciplinary Team Activities

Interdisciplinary Team Activity	Frequency of Activity (N=83)				Importance of Activity (N=79)			
	Never N %	Infrequently N %	Frequently N %	Very Frequently N %	Not Applicable N %	Unimportant N %	Important N %	Very Important N %
27. We reschedule students within the team as the need arises.	23 27.7%	19 22.9%	27 32.5%	14 16.9%	21 26.6%	5 6.3%	32 40.5%	21 26.6%
28. One member of our team is responsible for coordinating with non-team teachers who share our students.	53 63.9%	17 20.5%	8 9.6%	5 6.0%	35 44.3%	17 21.5%	20 25.3%	7 8.9%

APPENDIX I

Teacher Responses to "What are the best aspects of being on an interdisciplinary team and why?

I feel that our projects both stimulate and reinforce content.

Improved instruction, Teacher less isolated

The interconnectedness of English and Social Studies enables students to learn information that if presented in a vacuum often eludes them.

I know my students better than I know my non-team students. I also know my fellow teachers very well. We can "get under the kids' skin."

Reinforces learning

Sharing information on students - problems, solutions, etc....It gives you a better chance of reaching the student.

Two heads are always better than one.

Teaming definitely addresses the needs of large student groups.

Kids learn better - we probably take more risks
2X discipline, (I can handle individuals while other teaches)
We have fun together - teach and planning new stuff

Consistency, Reinforcement from 2 teachers of related materials

Students are easier to work with because you would know the teacher

We get to know our students better. We can detect problems and concerns earlier and react as a team.

The holistic approach to learning is offered the student, and the student feels more cared for and appreciated. New teaching techniques are a possibility, which consequently means less "burnout."

Sharing ideas, giving students a broad based perspective

APPENDIX I (continued)

Teacher Responses to "What are the best aspects of being on an interdisciplinary team and why?

Help you see a bigger picture of the students' skills and abilities.

Sharing ideas and methods

Students are regarded as a team with 3 teachers looking out for them instead of one. Skills are re-enforced at times in the math class when we are working on life skills (checkbook, tax forms, etc.)

Extra planning time

Identifying problems, shared curriculum (in our future)

Students are the winners!

Someone to share the load - the support factor

It helps to make "things" make more sense for students. It is a more holistic approach to teaching --> connections take place

Students see the connection between literature and the content in which it was written.

Sharing concerns regarding the needs of our students
Making connections w/in subject matters for the students

If implementation was carried out correctly - teachers and students could benefit from the sharing of ideas and visualizing the total picture

Being able to discuss curriculum and students

It seems that the same students have problems in all classes. We are able to discuss problems some students are having in our classes. We have conferences with these students, and it has made a difference in out classroom. Their attitudes are better, and they do much better in out classes after the conferences.

Total coordination and "big picture" view of both curriculum and students. makes content relevant to students.

APPENDIX I (continued)

Teacher Responses to "What are the best aspects of being on an interdisciplinary team and why?

Tying US history and Amer. lit is natural and appreciated by the students

New strategies, no comfort zone - keeps us fresh sometimes, our own subject is boring

Shared information and responsibilities - makes it easier to deal with problems and communication

Ability to coordinate handling of disciplinary problems and parent communication

Coordination, camaraderie, pulling best from students through numbers

Coordinated, holistic approach to teaching. Eases burden on individual teachers

As a first year teacher working with a 14 yr veteran in the same room, I have to say that the support I get is the best aspect. I never have to decide what to do in a sticky situation - my team-teacher is always there to help.

Shared activities allow students to experience, process, and explore in depth

Increased professional contact with colleagues - Allows greater access to students - Better able to build rapport

Giving students a co-ordinated, connected curriculum that brings together subjects that they must take; working with a team

Within a block of time teachers may decide how long the want the students daily, if at all, for their discipline
Sharing of ideas and peer support

Get to know students better - feels like large family
Students can make connections throughout studies. Access to 4 teachers

Awareness of what each is doing so we can coordinate our programs

You can relate your subject to another, therefore seeing the importance of both

APPENDIX I (continued)

Teacher Responses to "What are the best aspects of being on an interdisciplinary team and why?

Students benefit by making multiple connections between disciplines

Teamed Instruction across curriculum; block time, working w/ other teachers as a team, relating material to other disciplines

Getting to know the students and cohorts better.

The time is available to complete longer tasks. The reinforcement of shared activities. the discussion of students' problems.

Consistency with students - class rules, discipline plans
Team conferences with students and parents

Working w/a fellow professional, sharing the same students.

Sharing ideas about teaching. Showing the students that the world operates on an interdisciplinary level.

As a member teacher of Project Success at [name of high school] we built a greater sense of community with our students and ourselves.

Support/feedback

Camaraderie and support. Better use of time. It's efficient instruction/learning. Reinforcement of skills being taught

Sharing students enables us to recognize early and handle quickly any potential academic and behavioral problems of the students. Also students do begin to recognize recurring themes and interwoven text of history and literature.

By "sharing" students we are more aware of their successes and failures in other classes. Being a team member provides support.

Sharing of ideas, cross-curriculum planning which leads to unity in the learning experiences for students

APPENDIX I (continued)

Teacher Responses to "What are the best aspects of being on an interdisciplinary team and why?

The team approach strengthens the curriculum
Interdisciplinary approach keeps learning from being an isolated skill-

Flexibility - particularly in time.
Closer relations with students - and closer monitoring.
Chance for teachers to learn more about their partners subject! This is great!
Reinforcement for students. Tremendous enrichment - subjects are seen as related - not isolated. Student benefit tremendously.

Opportunity for interdisciplinary teaching/learning
Share resp. for problems/solutions

Interaction with my peers; getting to know students much better; making content more relevant; blocking time; more control curriculum;it's more fun!

It is the most effective, sensible,realistic teaching I have done, and I have done some pretty good teaching in 11 years. The team is connected by realistic, non-political bonds, not arbitrary or forced. We're volunteers.

Having another adult always present in classroom. Having each other for constant resource. US/VA History and English 11 are "naturally" interrelated.

Moral support, Being able to change schedules, Team/student conferences

Class procedures and discipline techniques are co-ordinated so that students know what to expect. Having a comrade to offer support and alternate ideas gives teachers a strong feeling of professionalism.

"You are not alone." A teacher has opportunities to learn more about <u>each</u> student. Problems can be halted before they become serious. Having a sounding board and hearing others' views are most helpful. In our case, three people can do more to help a student than one can. Students appreciate a "family approach." We have consistency.

It reflects the fact that knowledge and experience are a whole, not fragmented

APPENDIX J

Teacher Responses to: "What are the worst aspects of being on an interdisciplinary team and why?"

Lack of true common planning. Too complex master schedule.

No team planning time - not given to us.

Not enough time to plan.

None.

None!

Only three teachers on each team could be scheduled with common planning time: the science, social studies, and English teachers. More teachers, especially math teachers are needed on the team. Interdisciplinary studies are difficult to put into operation. However, we are striving to include more such studies in the near future. We just could not do everything at once.

I have nothing negative to say here - I can foresee real problems, however, if the team members do not get along.

Very time consuming. Student load remains the same. No extra time allowed. Negative perceptions by other faculty members.

We are constantly attacked and we are constantly required to defend our vision. Status quo people are threatened by us. We are perceived as elitists and resource-hogs despite powerful contrary evidence.

Presently no worst aspect but if teammates are not "on same wavelength" and don't share similar philosophies of teaching, teaming can be hell.

Some students feel they are being treated more like Middle School students than high school and don't care for the overlapping of material

The school is not set-up for team work.

Having a schedule and a physical facility (school) which is not conducive to meeting all students in a place at the same time.

APPENDIX J (continued)

Teacher Responses to: "What are the worst aspects of being on an interdisciplinary team and why?

Making sure we communicate (no common planning)
Selecting the students who apply (time consuming)

Scheduling units to meet the time frame of other teachers.

The most difficult aspect os in scheduling planning periods together.

None

None - Perhaps the fact that we don't have a large enough space to accommodate our 50 students and have to kick one teacher out of her larger classroom in order to have the space we need to share a particular joint lesson.

The most difficult aspect is achieving a true interdisciplinary approach that is not just a parallel teaching of history/literature of some time period.

Getting support to do ITI units

Giving students benefit of three teachers experience and expertise is good. Sometimes one subject may be neglected - at other times it is difficult to integrate all three subjects and include all needed material.

Loss of content.

Loss of content. Stopping in the middle of your planned curriculum in order to team.

Student scheduling has been a problem

Trying to stay with the other teacher in relevant subject matter

I wouldn't say it's the worst aspect but the most difficult - trying to coordinate and mesh the two disciplines

Very time consuming, more work, little compensation.

Too much work; no compensation and very little positive feedback

APPENDIX J (continued)

Teacher Responses to: "What are the worst aspects of being on an interdisciplinary team and why?

TEAMING! Teachers are unique personalities and sometimes don't deal well together
Dealing with the administration and coordinating within traditional guidelines

Learning to team teach is difficult, with two different teaching styles
Developing interd. units that also cover the SOL's

Finding time to plan. Team members - 2nd year - (1) - First year for (2) - Continuity
Team changed because content changed - time?? too busy! Reg. classes.

Not meshing with team members: different styles, goals, etc.

There are times when we disagree on how to approach a problem.

This is the first year of this, so we are lacking some critical funding from the county.

Very little to no planning time - we had to struggle for a common planning period.

Being tied to another teacher is stifling my spontaneity in class.

Scheduling nightmare! Because of the groupings and course offerings available, team sizes for the three teams are way out of balance.

Too many meetings

Meetings, added phoning!

Not enough time.

You sometimes feel compelled to change some of your tactics to comply w/ team policy.

There is no structure - our guidelines were to teach similar units and bring the disciplines together.

Different approaches to classroom management

APPENDIX J (continued)

Teacher Responses to: "What are the worst aspects of being on an interdisciplinary team and why?

Personality differences - If you're not on the same wave length with your partner it's trouble

It's time consuming to plan and evaluate together

Selfish behavior on the part of a team member
Slacking off by team member
Lack of any administrative support
Differences in grading policies and in discipline matters

Time limitations

Large number of students scheduled for classes
A - disciplinary problems with larger group of students
B - more difficult to schedule field trips with larger group of students
C - Funds for programs

NO TIME

None yet

Sometimes the students tire out from seeing us and knowing we are a team. They react negatively when the English teacher says something to them about how they behave in the math class and vice versa

None

It is too confining. The students are kept in one basic area for the greater part of the day. They do not get acquainted with other faculty members in with the building.

Time consuming. Need to meet and agree on what and how to present topics. Discipline seems to be inconsistent due to different styles.

Time and curriculum that overlaps ie - we have to make it up as we go.

We find (as usual) that there is a lack of time to plan for other non-dis. classes

APPENDIX J (continued)

Teacher Responses to: "What are the worst aspects of being on an interdisciplinary team and why?

Extra paperwork involved. Sometimes seems if Administration is passing their presence and burden to teams for discipline action rather than doing their job.

It is very time consuming.

Not enough time!

My partner and I like each other and shape program together - I think a person I did not like would be dreadful to team with.

No. We feel that this idea should be expanded throughout the school.

You must stay in contact with your team member.

School scheduling is often a barrier for optimum teaming efforts.

Time demands

Uses time

As long as the team works well together there is no "worst aspect" of being on a team.

The worst aspect is not being able to "reshuffle" the kids within the team. Kids who are incompatible with each other must remain together or leave the team.

Finding time to meet; different teaching styles

APPENDIX K

Teacher Responses to: "Explain any activities that your inter disciplinary team is implementing that are not on the list above."

We invite kids to each lunch with us (the teachers). We really get to know the kids.

We produce portfolios and have a portfolio committee review the results.

We do lots of that "second and third curriculum" stuff - self-esteem, attitude, career sheets, college counselling, etc. - very personalized

We set up conferences with students and guidance counselors

Team meeting discipline
Team meeting parental conferences

You covered it well - last year, we did have 6 teachers sit on and research interdisciplinary potential, attend conferences, etc. and I was one of the 6 on the committee.

Manipulative activities - easier to keep an eye on misconduct!

None

3 on 1 teacher/student conference

I-search presentations - focus on multiple intelligences

DNA

Our team is more curriculum oriented, rather than student oriented

When financially possible, field trips are taken

After school classes for credit

I noticed that you have nothing on Cooperative Learning. We have used cooperative learning techniques in the classroom with great success. We also spend a few moments each day learning vocabulary.

APPENDIX K (continued)

Teacher Responses to: "Explain any activities that your inter disciplinary team is implementing that are not on the list above."

We (2 teachers) teach Amer. Studies (Am. Lit and History) in a 2 class blocked schedule. Our "team" is 2 teachers only who are constantly working together (1 room) in presenting content. We plan our content to follow historical chronology, e.g. read "Last of the Mohicans" while studying French-Indian War. We also use the block of time to take students outside class for field trips, e.g. archaeological dig at Poplar forest

Community Awareness through service projects

We take out group on 2 major field trips a year. Our team has math/sci/soc st/Lang Arts taught around a central theme of ancient cultures

Student projects are geared toward including all of the disciplines

Field trips role plays writings

Our program is called Project Success. Students who have potential attendance behavior, academic, or social problems are referred to us by the middle schools. We provide much positive reinforcement to give students a good beginning in High School.

Project Success coordinates teach, parent, and student awards as a cumulative project for the year.

We decided not to have shared planning in order to increase our flexibility in meeting w/ our shared classes

Coordinated guest speakers, field trips, shared writing assignments, assistance locating resource material

Art/music/dance history

We try to incorporate U.S. art in the curriculum by having guest speakers from the Corcoran - or, minimally, planning a field trip

Combining GT and regular and allowing some students to get GT credit

APPENDIX K (continued)

Teacher Responses to: "Explain any activities that your inter disciplinary team is implementing that are not on the list above."

GT Gen Ed. combination
Large-scale "real" projects in conjunction with the real-world involvement of parental assets/team development w/ parents

We are a two-person team, much of what is listed above is no applicable. American history and American Literature are natural "companions"

Grade busters software
mandatory assignment books and notebooks

The two areas we are directing attention to now are the interdisciplinary units of study and more student recognition

Shared essay assignment, research projects, trials taken from literature, choosing historical novels

APPENDIX L

Teacher Responses to: "Are there any other comments you would like to make on interdisciplinary teaming?"

It is great but need to be given support as in planning periods at same time.

Excellent idea which requires a lot of time and planning

Great! The best thing that has happened to me in 20 years of teaching. My concern is that funds will become unavailable to continue the two planning periods

I would never want to go back to total soloing. team teaching is wonderful for the student and for the teacher. Teachers must work together. After all, we are supposed to prepare our students to do what we do and what we should do - working together for a better product.

This is the 1st year doing this, so I don't have an opinion.

It is marvelous for students and teachers if: Teachers get along
Subjects are related- such as English and history
For teaming to work and provide maximum benefit, the physical facilities must be adequate. i.e - a room large enough to hold the students comfortable and ideally, provide room for group work.

Some teachers are reluctant to try it
Master scheduling seems to be a problem

In a large school students really benefit by not falling through the cracks. Life is much more flexible.

Everyone should do it. In a complex society with complex knowledge, simplistic and traditional teaching can't meet all needs. It's fun.

I enjoy teaching this group

Very helpful for students with problems who need consistency.

I think interdisciplinary units and planning are not only helpful to the student but vital for proper understanding of the world. I wish my team would do more planning.

APPENDIX L (continued)

Teacher Responses to: "Are there any other comments you would like to make on interdisciplinary teaming?"

We have just begun (2nd year). Two teachers (soc. studies and English) = team (4 of each)

Until this year our meetings have been more formal and regular. This year team members meet informally almost every day. Emphasis is on teaching - not record keeping!

Planned units of study periodically work well; however, to avoid loss of content needed as preparation for grade 10, "regular" class periods are necessary. The English teacher must be more than just a writing instructor.

So far it has been fun. Also, it's been a challenge.

Fragmented instruction must be a thing of the past and interdisciplinary teaching can ensure its demise

If we could truly do it "right," I would like it much better!

Interdisciplinary teaming difficult, but rewarding in terms of student interest and achievement. It is hard for me to imagine doing this for very long.

Teachers should develop it - not be told by administrators to do it. Teachers should not have more than two lesson plans.

The biggest stumbling block is the inability to fit math in - last year we tried all levels of math together and it did not work. Parents and administrators want specific credits like Basic Alg or Alg I rather than just Math 9 or Interdis. Math.

High school teachers in (name of place) has not been exposed to interdisciplinary teaching. Academic Tech is a new program and the staff has not been enthusiastic about team teaching - or Academic Tech. Most prefer to control with sole responsibility for their required content area.

I think that interdisciplinary learning is just good common sense. A team of teachers, willing to work together, can have a far greater impact on a student.

APPENDIX L (continued)

Teacher Responses to: "Are there any other comments you would like to make on interdisciplinary teaming?"

It's the best thing to happen to me professionally!

Time is definitely a key to success!

Interdisciplinary teaching is so much better when each team teacher is teaching a team class at the same time. We can trade students or spend more time than normal on a particular subject or integrate more by having all teachers present. This is impossible if i teach a non-team class when my team wants to get together.

Our team is very new. this is the first year of implementation. Because it is very early in the year, there are many of these things which we hope and expect to do but have not yet had the opportunity or time to do. We hope to implement these as the year progresses.

It is a waste of time without proper implementation, teacher training and resources. it looks good on paper and for school officials. I have not seen any benefits so far - my partner and I are very creative, but we have no resources - we can't even take local field trips!

Not enough experience yet.

I am teaming with the photography class (my English 11 GT) to produce a poetry/photography exhibit. Each teacher has different students, but classes meet at the same time. It's a team only for this project. (In my English class I use the methodology of interdisciplinary whether or not I am teaming with a teacher from another discipline)

Teachers must be committed to the concept.

Everyone should be included.

Good, if you have time to do your planning also. By the way, block schedule stinks.

It takes time and extra planning to make it effective. This year they took our extra planning away from us and often times it is difficult to meet regarding the team. Our time is largely spent w/ individual planning.

APPENDIX L (continued)

Teacher Responses to: "Are there any other comments you would like to make on interdisciplinary teaming?"

Need more ideas and practice!

Start small, measure results carefully, avoid overcrowding classes, and slowly build on new aspects; but allow for student feedback and opinion.

We have just started block scheduling and we haven't really gotten into interdisciplinary teaming.

Our kids do better on standardized tests, feel prepared, etc. (Come back from college, etc.) It's unique in our school and really makes them feel special

I go home everyday knowing I'm doing the right thing!

Our team is made of English/Modern European History - much of your survey is difficult to respond to your survey. Other teams fit much more closely.

Teachers should never be assigned to a team

VITA

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Ms. Benezra has had a rewarding career in education, teaching pre-school, elementary, middle, and high school in cities across America and in Europe. Among the many highlights of her career are teaching college math and English to U. S. servicemen overseas and serving as a learning styles consultant for several school districts in the U. S.

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