A COMPARISON OF INTERDISCIPLINARY TEAMING AND TRADITIONAL DEPARTMENTAL ORGANIZATION AT THE SEVENTH GRADE

A thesis submitted in partial fulfilment

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Educational Specialist

By

David Alan Gates
B.S. Ed., Otterbein College, 1965
M. Ed., University of Dayton, 1979

Arlene Calico Gates
B.S., Eastern Kentucky University, 1963
M. Ed., University of Dayton, 1979

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I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY *David Alan Gates and Arlene Calico Gates* ENTITLED *A comparison of interdisciplinary teaming and traditional departmental organization at the seventh grade* BE ACCEPTED IN PARTIAL fulfilment OF THE REQUIREMENTS FOR THE DEGREES OF *Educational Specialist.*

_____ Advisor

_____ Committee Member

_____ Committee Member

_____ Dean

ABSTRACT

GATES, DAVID A. and GATES, ARLENE C.

A COMPARISON OF INTERDISCIPLINARY TEAMING AND TRADITIONAL DEPARTMENTAL ORGANIZATION AT THE SEVENTH GRADE (140 pp.), September 1994.

Faculty Advisor: Donald Frericks, Ph.D.

PROBLEM. This study was conducted during the 1993-94 school year to compare two different groups of seventh grade students. Participants in the study were 60 students in an interdisciplinary team, their parents, and teachers, and 60 students in a departmental organization, their parents and teachers. All participants were students, parents, and teachers at Bridgeview Middle School and residents of Shelby County in Ohio.

Hypothesis. The use of an interdisciplinary teaming approach in middle school organization will have a positive effect on the achievement, attitudes, behavior, and attendance of seventh grade students. The use of an interdisciplinary teaming approach will have

a positive effect on the attitudes of the students' parents. The use of an interdisciplinary teaming approach will have a positive effect on the attitudes and professionalism of teachers.

PROCEDURE. A study was undertaken to compare an interdisciplinary team of 60 students, their parents, and teachers with 60 students in a departmentalized structure, their parents, and teachers.

Student academic achievement, discipline records, attendance records, student attitudes, parent attitudes, teacher satisfaction, and teacher professionalism were compared for both groups using academic scores, office records, and Likert Scale survey scores. The mean scores for each of these were compared by graphic and statistical procedures. Tables and graphs were constructed. Statistical procedures permit the educational decision maker to go beyond trends and hunches and make decisions on the basis of predictable outcomes.

FINDINGS. Based on statistical analyses of the data collected, the study found significance in each of the seven hypotheses tested. The study found that at Bridgeview Middle School during 1993-94 the organizing

of seventh grade students into an interdisciplinary team had a significant effect on each of the seven hypotheses: student academic achievement, behavior, attendance, and attitudes, parental attitudes, teacher satisfaction, and professional development of teachers. **CONCLUSIONS AND/OR RECOMMENDATIONS.** This study concluded that the reorganization of seventh grade students at Bridgeview Middle School into an interdisciplinary team resulted in significant improvements in the seven areas studied. The study also relates to issues of motivation, self esteem, and confidence of students. Reduction of teacher isolation, greater collegiality, and improved professional development were benefits to teachers. The results support reorganizing the entire school into interdisciplinary teams as quickly as feasible.

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Finally, a heartfelt thank you to the seventh grade students and their parents who completed surveys and supported this entire project.

DEDICATION

This project is dedicated to our students because they are the reason we do what we do.

CHAPTER I

Introduction

The literature on middle school restructuring reflects three broad themes. One theme that emerges is student experiences in school. These are formed by the curriculum, by instruction, academic and nonacademic support, assessment, school climate, and student attendance and behavior. A second theme is teacher professionalism. Collegiality and decision making power have been proposed as ways to enhance the image and satisfaction of teachers. The third theme found in the literature is school management. Within the school management sphere, reallocating authority and accountability become mechanisms for sharing power with parents, teachers, and others in the community. These three themes form the framework of a variety of major restructuring efforts (Arhar, 1992).

Interdisciplinary teaming is widely viewed as the keystone of restructuring efforts that answer concerns surrounding these themes (Capelluti, J. 1991). However, those involved in reorganization need to be aware of the lessons learned from research. Reorganization by itself does not lead to substantial changes in the

content of schooling (George & Alexander, 1993; Lounsbury, 1990; Eichhorn, 1991).

Researchers of teaming have had difficulty identifying problems and areas of crucial importance. Groups involved in developing, implementing, and administering teaming perceived different perspectives. Those involved in the everyday operation of schools are confronted by various problems. One problem situation could occur when a team must accommodate a particular student or student group related to a special activity. Another problem could be determining whether the outcomes of teaming are worth the extra effort and resources that will be needed. Funding sources sometimes determine the direction of research that may or may not have any practical application. Clearly, investigative forces, theoretical constructs and programatic support influence the functioning and satisfaction of the school program. This study will attempt to unravel the programatic web and suggest a worthwhile educational direction.

To understand the complexities of teaming, researchers draw on organizational theory, social learning theory, cognitive learning theory, theories of

culture, and curriculum theory to name a few. Unfortunately, many studies of interdisciplinary teaming do not make clear links between theory and practice. For example, early studies of teaming attempted to find links between achievement and teaming. The outcomes of such studies were mixed due to the many variables involved and the complexities of restructuring. It is difficult to separate the effects of interdisciplinary teaming from other school programs and practices that may have been created to accomplish the same things (Arhar, 1992; Schlechty, 1994).

Purpose of the study

The Carnegie Report (1989) argues that restructuring middle grade schools would vastly improve the educational process in the schools. Inglis (1918) and Alexander (1968) articulated ideas remarkably similar to the Carnegie Report. One recommendation of the Carnegie Report was the formation of interdisciplinary teams where a group of teachers, one from each subject area, could accomodate a group of from 100-150 students, thereby creating a school-within-a-school. Teachers could use flexible scheduling as needed and anticipate and solve student problems

more easily. A team concept should enable students to achieve greater gains in learning and social development (George & Alexander, 1993). Other recommended middle school practices include cooperative learning, peer tutoring, and advisor/advisee programs. Effects of interdisciplinary teaming is the only subject of this study because the other concepts have not been fully implemented at the school being studied. Will an interdisciplinary team organization yield greater student achievement, less absenteeism, fewer discipline referrals, and better attitudes toward school than traditional programs? Will teaming improve teacher, student, and parent attitudes toward school? This study seeks to determine if reorganization into interdisciplinary teams produces better results in these areas than the traditional departmentalized organization.

This study took place within a single school rather than between schools where programs have been implemented school-wide. This gives an uncontaminated study in relation to some environmental factors. Interaction among faculty and students, however, may have created an interaction effect which could weaken

the generalizing of these findings.

Bridgeview Middle School received a Venture Capital Grant for future expansion of this pilot program throughout the building. The grant calls for distribution of the results of the pilot study state wide. This study seeks to compare differences between teamed and nonteamed seventh grade students at the end of the 1993-94 school year. Such findings have implications for those in leadership positions regarding future restructuring decisions. Parental satisfaction also has implications. Nationally and locally, schools have come under increased criticism from parents. The findings of this study could help to lessen some of this criticism.

Statement of the problem

This study focused on the effects of change in management at Bridgeview Middle School from total administrative decision making to shared decision making through interdisciplinary teaming. The impact of this change on student experiences in school was measured by examining academic achievement, attendance, discipline records and attitudes of seventh grade Bridgeview students. The investigation compared state

practice proficiency test scores, attendance records, office discipline referral records and student attitude surveys for the experimental group and the control group. The impact of this change on teacher professionalism was measured by examining teacher attitude surveys and the record of professional development seminars attended by teachers of the study group and teachers of the control group.

Assumptions underlying the study

Recent literature has identified the interdisciplinary team organization of teachers as the one critical element which can increase the effectiveness of middle schools (George & Alexander, 1993). Considering this, it is assumed that a study on the effect of interdisciplinary teaming on the achievement and behavior of students and the attitudes of students, parents, and teachers is a legitimate, timely, and significant area for inquiry. The findings may have implications for middle school teachers' preparation, staff development, and the restructuring of middle schools.

A second assumption of this study is the *Ohio Practice Proficiency Test* is an appropriate instrument

for measuring student achievement. Further, records of office referrals and suspensions are assumed to accurately reflect student behavior. It is assumed that the questionnaires for students, parents, and teachers will gauge the attitudes of the three groups.

The fourth assumption of this study is that a randomly invited group of teamed students at Bridgeview Middle School and an equally sized randomly invited group of nonteamed students from the same school in the same year are comparable related to academic and attitudinal variables. Since interdisciplinary teaming is the only recommended middle school practice that has been implemented, this study assumes that differences between these two groups are differences due to interdisciplinary teaming.

Delimitations of the study

The main area of assessment was on the cognitive and affective domains of seventh grade students. The scope of the investigation was limited to a comparison of scores on the *Ohio Practice Proficiency Test*, office discipline records, attendance, and attitudes. Data from these was collected during the 1993-94 school year at Bridgeview Middle School in Sidney, Ohio. Data was

collected from a total of 120 students (60 teamed students and 60 nonteamed students), the students' parents, and the students' teachers.

Limitations of the study

The surveys used in this study were prepared by the researchers and have not been validated. The *Ohio Practice Proficiency Test* given to seventh grade students has not been validated.

Hypotheses

This study was designed to examine several research hypotheses.

Hypothesis 1: Seventh grade students who are in an interdisciplinary team will show greater academic achievement than seventh grade students in a traditional departmentalized organization. The null hypothesis thus becomes there will be no significant differences between the achievement measures of the experimental and control groups.

Hypothesis 2: Seventh grade students who are in an interdisciplinary team will have fewer office referrals and suspensions than seventh grade students in a traditional departmentalized organization. The null hypothesis thus becomes there will be no significant

difference between the office referrals and suspensions of the experimental and control groups.

Hypothesis 3: Seventh grade students who are in an interdisciplinary team will have better attendance than seventh grade students in a traditional departmentalized organization. Thus, the null hypothesis becomes there will be no significant difference in the attendance of the experimental and control groups.

Hypothesis 4: Seventh grade students who are in an interdisciplinary team will have a more positive attitude toward school than seventh grade students in a traditional departmentalized organization. The null hypothesis thus becomes there will be no significant difference in the attitudes toward school of the experimental and control groups.

Hypothesis 5: Parents of seventh grade students who are in an interdisciplinary team will have a more positive attitude toward the school than those parents of seventh grade students in a traditional departmentalized organization. The null hypothesis thus becomes there will be no significant difference in the attitudes of students' parents in the experimental

group and students' parents in the control group.

Hypothesis 6: Teachers working in an interdisciplinary team will evidence greater satisfaction with teaching than teachers working in a departmentalized setting. The null hypothesis thus becomes there will be no difference in satisfaction of teaching among teachers in the experimental group and teachers in the control group.

Hypothesis 7: Teachers working in an interdisciplinary team will have a greater commitment to professional development than teachers working in a departmentalized setting. Thus, the null hypothesis becomes there will be no difference in professional development among teachers in the experimental group and teachers in the control group.

Definitions

Control group - A group of 60 randomly invited seventh grade students who are not in an interdisciplinary team.

Experimental group (Study group)- A group of 60 randomly invited seventh grade students who are on the interdisciplinary team.

Flexible scheduling - Using a four period block of

time to adjust student schedules according to students' needs and teachers' requirements for instruction and related activities.

Interdisciplinary team - Four teachers who instruct 105-110 students in language arts, math, science, and social studies during block of four periods.

Middle level students - Students in the seventh and eighth grades.

Ohio Practice Proficiency Test - An alternate form of the *Ohio Ninth Grade Proficiency Test* given to seventh grade students in Sidney, Ohio.

Restructuring - Changing a school from a departmentalized organization to one with interdisciplinary organization. Scheduling changes from rigid periods to flexible scheduling within a four period block.

Summary

The purpose of this investigation is to determine whether the effects of interdisciplinary teaming on seventh grade students, their parents, and teachers changes performance, attendance, and attitudes of

students, their teachers, or the students' parents. This study assumes that the interdisciplinary team organization influences the cognitive and affective development of seventh graders. It also assumes that interdisciplinary team organization influences attitudes of parents and teachers as well as the professional development of teachers.

To test the assumptions of this study, data was collected on achievement, behavior, attendance and attitudes of an equal number of teamed and nonteamed students, their parents and teachers. The data was analyzed using appropriate statistical techniques and charting presentations. Results were reported and conclusions and recommendations presented.

Chapter Two of this thesis is a detailed review of the literature and research on middle level education, especially as it applies to interdisciplinary teaming.

Chapter Three is a detailed explanation of the methodology and design of this study. It describes in detail the sample population, treatments and instruments used, and data collection procedures. A full explanation of the experimental design and analysis procedures is also included.

Results of the procedures, including data are presented in Chapter Four. The data are analyzed, and a summary with conclusions and recommendations is presented in Chapter Five.

CHAPTER II

Review of the Literature

The following chapter is a detailed review of the literature and research on the education of middle level students, and the effects of interdisciplinary teaming on that education. Attention is also given to student attendance rates, student behavior, student attitudes, staff morale, staff development, and parental attitudes and involvement.

History of middle level education

Understanding the history of the education of young adolescents in the United States is necessary for understanding present practice. The education of adolescents between the ages of eleven and thirteen was entirely the province of the elementary school until the last decade of the nineteenth century (Inglis, 1918). By the 1920s many schools had changed organization so that these students were being educated in junior high schools (Van Denburg, 1922). Another shift occurred in the 1960s and continues to the present time. Junior high schools for grades seven, eight and nine have been replaced by middle level schools having a variety of grade combinations, but all

of them include grades seven and eight (George & Alexander, 1993).

The National Education Associations Committee of Ten, chaired by Harvard President Charles Eliot, issued its report in 1893 suggesting that the secondary program be expanded to six grades. In 1895 the Committee of Fifteen, established by the NEA's Department of Superintendence handed down its recommendations. These recommendations included one calling for a departmentalized organization of grades seven and eight to allow some secondary subjects to be offered. That same year, the NEA's Department of Secondary Education organized the Committee on College Entrance Requirements. Its report, issued in 1899, recommended that schools be organized 6-6. During the first two decades of the twentieth century, various organizations formed committees to study American education. The overwhelming sentiment of their reports was to endorse beginning secondary education before grade nine (Popper, 1967).

With the publication of G. Stanley Hall's *Adolescence, Its Psychology and Its Relations to Physiology, Anthropology, Sociology, Sex, Crime,*

Religion and Education in 1904, educators began to consider the special needs and opportunities of the early adolescent. If, as Hall suggested, puberty was the most formative stage of growth, the education and experiences at this level were of vital importance (Van Til, Vars & Lounsbury, 1967).

Cardinal Principles of Secondary Education was issued in 1918 by the NEA's Commission of the Reorganization of Secondary Education. It also endorsed the 6-6 organization plan and further suggested that the last six years be split into a 3-3 pattern. The commission suggested that the junior high should provide young adolescents with an environment in which they could explore their interests and abilities through a curriculum of elective courses along with the academic departmentalized instruction of the secondary school (Brimm, 1969).

The influence of this work is firmly stamped across the landscape of American education today. Recognition, early in this century, that young adolescents had the ability and need to encounter challenging academic content and simultaneously to examine and explore their interests and abilities

established the curriculum framework for these years of education.

The junior high school movement was iniated and nurtured in the American educational experience. The first junior high school opened in Richmond, Indiana in 1895. By 1915, the Bureau of Education reported that sixty-four school systems had organized using a 6-3-3 plan (Inglis, 1918). Just three years later a North Central Association poll of 1,165 secondary schools showed that 293 had either instituted junior high schools or were in the process of doing so (Davis, 1924). There was no consensus among schools on just what a junior high school was. In 1921 a North Central committee chaired by J.B. Edmonson reported that of the many schools calling themselves junior high schools only 53 fit the official definition of North Central (Koos, 1927). Their existence was sometimes due to practical considerations such as relieving congestion in other buildings in the system (Lentz, 1956). By the 1920's many districts reported that half all high school students were in the ninth grade. Since elementary teachers were paid less that high school teachers, quite a savings was realized by districts

that moved the ninth grade to the junior high (Van Denburg, 1922). In other cases educational reasons such as recognizing individual differences and providing conditions for better teaching were the driving force (Koos, 1927). This difference in purpose is due, in part, to the fact that no clear goals for junior high schools were articulated before they were adopted by school systems (Moss, 1969).

From the opening of the first middle school in Bay City, Michigan in 1950 through the mid-60s growth was gradual. During the 1965-66 school year 499 middle schools were reported in twenty-nine states (Cuff, 1967). During the late 60s and through the 70s the growth in the number of middle schools was phenomenal. Four thousand sixty middle schools were counted in the United States by 1977 (Brooks, 1978) and by 1988 there was an estimated 12,000 (Alexander, 1988).

The middle school movement grew out of dissatisfaction with the junior high school. The junior high school was seen as attempting to satisfy the demands and needs of high schools and colleges thereby ignoring the needs of students (Dettre, 1973). Proponents saw middle schools as student centered and

built around the demands and needs of early adolescents (Stewart, 1975).

If one looks carefully at the literature, it becomes obvious that purposes articulated for the middle school as that movement gained momentum bear a striking resemblance to those identified as purposes for the junior high fifty years before. The views expressed regarding junior high purposes by Inglis (1918) and those expressed regarding middle school purposes by Alexander (1968) identify three common purposes: to help students with the transition from elementary to high school, to respond to the needs and interests of early adolescents, and to provide for individual differences. These goals set for the junior high school were so obviously lost in implementation that the junior high became viewed as a system that was in no way capable of meeting the needs of its students. This foreshadows a pitfall for the middle school movement as well.

Summary of history. The education of young adolescents has changed in the last one hundred years. A century ago most students in this age group were educated in elementary schools. Early in this century,

the junior high school movement began. It was originally seen as a way to provide these students with more academic content than they could get in elementary schools. As educators became more aware of the special characteristics and needs of this age group, the middle school movement began. Its aim is to design middle level schools that are developmentally appropriate for young adolescents.

Middle schools today

Already research suggests that in many places the change from junior high schools to middle schools has been a change in name only. When Alexander (1968) surveyed 110 middle schools, he found that the curriculum and organization of the middle schools more closely resembled that of the junior high school than that of the middle school ideal. Brooks (1978) found that of the 4060 middle schools identified in his national survey, the vast majority were still organized as mini high schools. In reviewing these findings, Alexander (1978) maintained that they reflected the ignorance of educators concerning the goals and organization plan of the middle school movement. Some progress has been noticed in implementing

developmentally appropriate middle schools. Many middle schools that were instituted for financial or political reasons alone have become middle schools true to the goals of the movement (George & Alexander, 1993).

Currently the middle school movement is expanding at a greater rate than ever before. After all these years of real school reform largely being ignored, why now? The answer lies to a large extent in the emphasis coming from two projects: *America 2000* and *Turning Points*. Any discussion of literature regarding middle schools would be incomplete if these were not discussed in length. *America 2000,* adopted in 1990 by President Bush and the governors of all 50 states, established educational goals and set forth strategies for meeting those goals. It is a long range plan that explains the role that educators, governments, businesses, and communities must play to move every school system in America toward its stated goals.

At least three of these goals require changes in the way things are done in most middle schools. Graduating 90 percent of high school students, ensuring that all students learn to use their minds well, and

seeing that every student displays competency in challenging subject matter by the end of grade eight calls for major changes in thinking and practice.

Four strategies are given to reach these goals. The first is to improve existing schools and to hold them accountable. Setting national standards and using standardized tests to assess the level of attainment is set forth. Awards such as Presidential citations and Presidential Achievement Scholarships reward student excellence. The United States Department of Education has made a commitment to reduce bureaucratic red tape to give schools the flexibility to restructure and reorganize.

The second strategy deals with the establishment of a new generation of American schools whose practices are based on research. Its plan calls for setting aside all traditional assumptions about schooling and all the constraints under which conventional schools work. Ideas such as restructuring, interdisciplinary teaming, cooperative learning, and other strategies recommended for middle schools now have the support of this plan.

Strategy number three calls for a nation of students where the emphasis is on continuous learning

and on higher order thinking skills rather than simple rote learning of facts. This coincides with and supports recommendations for middle school practices that have been encouraged for many years.

The last strategy addresses the role of cities, towns, and neighborhoods. They are encouraged to support the attainment of the national goals in their own communities by adopting them, developing local strategies for achieving them, assessing progress toward them, and by being ready to lend support to the creation of new schools.

With this emphasis from the federal level, Ohio is taking these national goals seriously and is working to make each a reality (Ohio, 1994). Key principles of *Ohio 2000 / Ohio First* are contained in nine areas, two of which directly focus on current middle school theories. The first, break-the-mold-schools, focuses on building high performance schools that produce better academic results. Such areas as restructuring and interdisciplinary teaming, are encouraged via Venture Capital Grants. Teacher development and training to accomplish these goals are part of these grants. Training to improve teacher skills is to be

accomplished through regional teacher training centers and through Project Discovery.

Despite good research to suggest middle school reforms work, schools have continued to embrace past practices, offer excuses, and point the finger of blame as to why "Johnny can't read." It is little wonder that schools are feeling the pressures from government, business, and citizens to create positive changes in the schools. One has to wonder why perhaps the most comprehensive project on middle school reform, *Turning Points,* has been only halfheartedly accepted until now.

Turning points; Preparing American Youth for the 21st Century is a report calling for middle school reform. The report was prepared in June 1989 by the Carnegie Council on Adolescent Development's Task Force on Education of Young Adolescents. It is the definitive document to date on middle school reform. It asserts that, for many ten to fifteen year olds, early adolescence is a turning point in their lives. For many it offers a path toward a productive and fulfilling life but for many others, it represents their best, last chance to avoid a lessened future.

Early adolescence is characterized by many

significant changes, one being cognitive growth. With this new capacity to think in more abstract and complex terms, adolescents have a renewed opportunity for success in school. Unfortunately, by age fifteen substantial numbers of our youth are at risk of reaching adulthood unable to adequately meet the requirements of adulthood. It is estimated that seven million or 25 percent of American young people are at risk. Middle grade schools are society's most powerful force and perhaps the last resort to recapture at risk students. Yet all too often schools frustrate the problems of young adolescents. A mismatch exists between the school and curriculum and the intellectual and emotional needs of these students. Pulled by changing psychological and physiological demands, the involvement rate of youth in learning begins to diminish. Rates of alienation, substance abuse, absenteeism, and dropping out of school begin to rise. If these conditions are allowed to continue unabated, we face a two-class society: one affluent and well educated, the other poorer and ill-educated.

The Carnegie Report makes eight recommendations that it claims will vastly improve the educational

experiences of all middle school students but will most benefit those at risk. This study focuses on the four that are related to the middle school directly. The Task Force calls for middle grade schools to: (1) create small communities for learning where students will have close supportive relationships with adults and peers (a school within a school approach formed by interdisciplinary teams and advisor/advisee groups is recommended); (2) form core academic programs integrating subject matter, critical thinking, healthy lifestyle, ethical behavior, responsible citizenship and community service; (3) insure success for all students, by replacing tracking with heterogeneous grouping, cooperative learning, flexible scheduling and adequate resources; and (4) empower teachers and administrators to make decisions about environments designed to improve learning and emotional development of students (Carnegie, 1990).

In its plan for action, the Task Force calls upon all sectors that care about youth to form partnerships to create a time of exploration and preparation for constructive adulthood. Schools are to restructure middle schools, universities are to focus on preparing

middle school teachers, and health care professionals and community organizations are to form partnerships with schools. Government is called to provide incentives and funding in support of reform, and parents are urged to become involved in defining, monitoring, and evaluating the programs of the entire school.

The present status of middle level education must be viewed with this information and the credibility of these two projects in mind. Recent estimates suggest that 39 percent of the seventh graders in public school attend middle schools (Mac Iver & Epstein, 1991). The middle school movement is one of the largest, most comprehensive efforts at reorganization in the history of American schools. Lack of consistency and the inconclusiveness of available research calls for even more to be done.

Jackson (1990) reported that the response to the report of the Carnegie Task Force on Education of Young Adolescents (*Turning Points; Preparing American Youth for the 21st Century*) by the education community all over the country "has been overwhelmingly positive." He went on to say: "Nevertheless, some educators have

commented that there is very little new in the report. 'We are already doing that' is the common response to many recommendations in *Turning Points* from schools across the nation. Despite such perceptions, recent studies show that few of the recommended actions, though frequently proposed, are actually practiced in schools" (p.1).

Summary of middle schools today. National attention has focused on adolescence as the pivotal point in a student's educational experience. As a result, middle schools that set all students on the path to a productive life are essential. Research into school practices and their effects is beginning to build a body of knowledge that can guide the design of exemplary middle schools.

Interdisciplinary teaming

Most middle schools do not use structures such as clusters, houses, teams or schools within schools to make big schools small. About 60 percent of them use a departmentalized structure. More 6-8 middle schools (just over 40 percent) use interdisciplinary teams than do other types of schools (Mac Iver, 1990). Only 37 percent of all schools that serve seventh graders use

interdisciplinary teaming. Thirty percent of these provide no common planning time for teachers, and another 36 percent give team members two hours per week (Epstein & Mac Iver, 1990; Lounsbury & Clark, 1990; Mac Iver, 1990). The key component and the single greatest indicator of the quality of interdisciplinary teaming is the common planning time and its use (Epstein, 1990). If teachers are not given sufficient planning time in common, they cannot do the collaborative work that makes teams successful (Arhar, Johnston & Markle, 1989). Schools that provide more than two hours per week of common planning time that is used for team coordination report obtaining substantially greater benefits from teaming than schools that provide little or no planning time (Mac Iver, 1990). Findings suggest that the majority of teams do not have the common planning time they need to be truly effective.

There have been few definitive research studies conducted on the effects of interdisciplinary teaming. Some research shows impressive results, but it is inconclusive. There is especially little done in the area of cognitive outcomes compared to the studies examining affective outcomes (Walsh & Shay, 1993).

The research on middle schools is, however, beginning to confirm the importance of interdisciplinary teaming and advisor/advisee groups in creating more positive school climates, developing students' self-concepts, and preventing dropouts (George & Oldaker, 1985; Mac Iver, 1990). Research shows that most schools are not carrying out these programs. In many schools where interdisciplinary teaming and advisor/advisee groups exist, they are not functioning as they were designed to function (Alexander & McEwin, 1989; Lounsbury & Clark, 1990).

Summary of interdisciplinary teaming. Interdisciplinary teaming is the single most distinguishing feature of middle schools considered exemplary by the National Middle Schools Association. Most middle schools, however, have not implemented interdisciplinary teaming and few of those that have allow for a common planning time for teachers.

Student experiences in school

While 75 percent of the exemplary middle schools note better school attendance, most attribute this to the total atmosphere of the school and not to one facet such as teaming (George & Oldaker, 1986). The impact of

flexible scheduling yields some important but modest results. Mac Iver's (1990) data suggest those schools in which an average of nine advisor/advisee activities occur each month rather than never typically saves 2 percent of its students from dropping out before high school graduation.

Reorganization in the nation's exemplary middle schools has improved discipline. Approximately 80 percent note a significant reduction in office referrals and suspensions, while 60 percent expelled fewer students after the transition. Almost 90 percent report increased teacher confidence in managing and preventing most problems. Advisor/advisee programs and greater emphasis on school guidance often diffuses volatile emotions before they exploded into serious confrontations (George & Oldaker, 1986).

Over 95 percent of the middle schools studied by George and Oldaker declare that student's attitudes toward school and feelings about teachers is more positive. Eighty-six percent witness greater student participation. Over 80 percent of the respondents report that student emotional health, creativity, and confidence in self-directed learning are improved. Over

90 percent believed that students' self-esteem and social development benefit (1986).

Current school practices in interdisciplinary teaming are driven by what schools have discovered on their own. Since systematic research in this area is still in its infancy, there is not a full body of research on which schools can base their organization of such teams. Many leading middle school advocates have written that interdisciplinary teaming is the most important feature of effective middle schools (George & Alexander, 1993; Arhar, 1992; Carnegie, 1989; George & Oldaker, 1985)

Several priority goals for middle school education were established by the National Middle School Association in 1977. One, that every student should have ample experiences designed to develop decision making and problem solving skills. Second, that every student should acquire a functional body of fundamental knowledge. They further state that about one half the instructional time should be spent in curricula, such as social studies, math, and science, which provide students with much opportunity for problem solving. In addition the NMSA states that interdisciplinary team

teaching facilitates the attainment of these goals by developing instructional units that use human problems as a focus (Alexander, 1988).

George and Oldaker (1986) conducted a study involving 130 exemplary middle schools. Ninety percent of them organized students and teachers into interdisciplinary teams. Sixty-two percent of the schools reported consistent academic improvement. An additional 28 percent displayed increased scores on state assessment tests. Eighty-five percent observed that higher teacher expectancy levels may have led to the increases. The Carnegie Report is very pointed in its recommendation for preparing teachers for the middle grades: "Teachers should learn to work as members of a team and, within the team framework, to design and help teach interdisciplinary, developmentally appropriate programs of study" (p. 59).

Summary of student experiences in school. Reports from early research linked the use of interdisciplinary teams, flexible grouping and scheduling, and adviser/advisee groups to improvements in student achievement, attitudes, attendance, and behavior. More research needs to be done before these results can be

considered definitive.

Teacher professionalism

With greater complexities and increased criticism, teacher burnout and low morale are becoming alarming. This is not so at the exemplary middle schools. Ninety-four percent described staff morale as positive. Based on observation, 93 percent concluded the increased morale was based on the reorganization. Over half cited lower teacher turnover and absenteeism, noting that some teachers fought transfers to other schools (George & Oldaker, 1986).

Teaming, while it enhances morale, does not seem to alleviate stress. Research related to the effect of interdisciplinary teaming on teacher stress revealed that teacher self-image was enhanced. Teaming did not reduce the physical symptoms of stress nor a sense of reduction in work related concerns (Gatewood, Cline, Green, & Harris, 1992).

Interdisciplinary team teachers differ substantially from their departmental counterparts in their perceptions of the general climate factors in their schools. Team teachers see the school as more responsive to student needs and motivation, receptive

to ideas and open with teachers. The participative climate of the team structure is associated with increased teacher job satisfaction and increased teacher and student sense of responsibility for meeting the goals of the school (Walsh & Shay, 1993).

A seemingly obvious but often overlooked aspect of staff morale is the assignment of teachers to teams. In 70 percent of the schools that use interdisciplinary teams, administrators make the team assignments rather than allowing teachers to choose the members of their teams. In about 40 percent of these schools, teams can be adjusted if teachers dislike their team assignment. The evidence suggests that the advantages associated with giving teachers a primary role in making team assignments are important but modest. Self-chosen teams are more likely than administrator appointed teams to integrate instruction across subjects and courses. The negative aspect of teachers selecting teams is that there often becomes a contest to "get the best teachers on my team" which can often create ill feelings from those non chosen staff members. Many other aspects such as teacher reluctance, teaming requirements, involvement of all teachers, interpersonal issues, team

leaders, empowerment, and joint planning need to be considered (Arnold, 1982). Apparently the most workable method is some compromise where the administration and staff cooperate to select teams (Mac Iver, 1990).

Another overlooked advantage of teaming is the lessening of the feeling of isolation often reported by teachers in departmentalized schools (Mills, Powell & Pollach, 1992). A negative aspect of teaming is that interdisciplinary teams can become "islands in the stream" where teams are so involved in their own tasks that they become isolated from other teams. Research by Mills, et.al. also reported substantial isolation by team members from other grade level teachers, leaving many wondering if they were teaching the curriculum properly. One teacher remarked, "Even though you have the team to keep you from being isolated completely where you are one person all by yourself, there is no department blending and no grade blending" (1992, p.18).

Similar earlier studies have reported the same value of interdisciplinary teams for overcoming isolation (George & Oldaker, 1986; Mac Iver, 1990). No other research could be found in the area of interteam

isolation and interdiscipline isolation although this was observed by all the researchers across all three grades levels in Mills, et.al.'s study (1992). Further studies might explore these phenomena. Indeed, the issue of "islands in the stream" could diminish the total effectiveness of teaming in the school as a whole.

Summary of teacher professionalism. Research shows that teachers on interdisciplinary teams evidence higher job satisfaction, better morale, and a more positive view of their students and schools than do teachers not on interdisciplinary teams. Problems of being isolated from teachers not on the teams and with how teachers are selected for teams have emerged from some studies.

School management

Every one of the 130 exemplary schools examined by George and Oldaker in 1986 reported that the teachers and the administration collaborated on decision making as it affected the instructional areas. Both teachers and administrators indicated this was a positive morale boost.

Administrators noted greater staff participation

in designing and executing philosophy, curriculum, and objectives when they conducted staff development programs to help reorganization. Reorganizing in the middle school requires extensive in service training. In service and educational improvement programs applicable to all grades provided middle school staff with research findings and practices that revitalize teaching and learning in these crucial grades. These programs should provide teachers with opportunities to study early adolescent characteristics and behavior, to assess their schools, to reflect on practice, to learn about change, and to become involved in strategic long-range planning (George & Alexander, 1993).

According to the recommendation of the Carnegie Report, students should spend at least half of each school day in heterogeneously grouped classes. To begin heterogeneously grouping, schools might start with subjects where students are relatively even in skills such as social studies, health, and exploratory classes. Other suggestions are to use better criteria when grouping students according to skill level so that students are not assigned to math classes based on reading skills (or vice versa) or to set clear but

flexible criteria (Slavin, 1990). By grade seven, most students (64%) change classes for most subjects, particularly in schools that serve middle grade students only (Epstein & Mac Iver, 1990a). Changing classmates means students have more opportunities to interact with students who differ. Changing too often, however, can leave students feeling detached. The key is balance.

Research comparing exemplary middle schools to traditional ones found more parental involvement for the exemplary schools as indicated by better attendance at open houses, conferences, and PTA meetings. It also found that parents were more likely to become involved in exemplary schools by chaperoning, volunteering to help in the building, coaching, and teaching mini courses. The researchers concluded that the increased community involvement encouraged financial support for the schools (George & Oldaker, 1986).

Some specific practices have been shown to increase both parent and community involvement. The transition of students from the elementary school to the middle school is one that causes parents concern. Schools that invite parents to have a part in

transition activities have higher levels of parent participation throughout the year (Mac Iver, 1990). Middle schools can provide parents and community members with characteristics of early adolescents, their needs, and how the school is responding to these needs. Many also involve them in volunteer programs, parent education classes, and promotional activities (Clark, 1993).

A major advantage of flexible scheduling is that uneven periods can be created to allow for longer time in the science lab for experiments. Uneven periods can accommodate a testing schedule, provide research time in the media center, and allow time for special projects. Flexible scheduling also allows for large and small group instruction (Spear, 1992). Ninety-four percent of the exemplary middle schools used some form of flexible scheduling (George & Oldaker, 1986).

Summary of school management. Every middle school identified as exemplary reports that decisions about philosophy, curriculum, objectives, and long range planning are made cooperatively between teachers and administrators. These schools also had high levels of parent involvement. Research on scheduling and grouping

indicates that middle schools in which teachers have the flexibility to change schedules and groupings throughout the year are more successful. Such schools avoid the choice between tracking and not meeting needs of special populations.

Summary of the Review of Literature

Interdisciplinary teaming is often advocated in the literature as a superior alternative to the junior high school's departmentalized organization. The research is, however, meager. Most of the research that does exist deals with the social effects on students and teachers.

Areas such as student achievement, behavior, and attitude are poorly represented in the research on interdisciplinary teaming. More attention is needed in studies of teacher professionalism as well. As school management changes, it is important that decisions on the types of changes made be based on valid research.

CHAPTER III

Methodology

Introduction

The analysis of the effects of interdisciplinary teaming upon seventh grade students' experiences in school, teacher professionalism, and parent attitudes will be carried out by comparative analysis using research methodologies set forth in this chapter. A single summary of the seven hypotheses is stated below:

> The use of an interdisciplinary teaming approach in middle school organization will have a positive effect on seventh grade students' academic achievement, behavior, attendance, and attitudes, parent attitudes, teacher satisfaction, and teacher professionalism.

The intent of this study is to discover significant differences between students organized into an interdisciplinary team, their parents, and their teachers and students organized in the traditional departmentalized method, their parents, and their teachers. The research is action research.

Study population

The population for the study came from a total

group of 318 seventh grade students at Bridgeview Middle School in Sidney, Ohio. Two groups of 60 students (36.3 percent of the total enrolled in the seventh grade) were selected using Quattro Pro 5.0 spreadsheet software (Borland, 1993). Sixty seventh grade students were selected from an interdisciplinary team to form the experimental group. A second, the control group was composed of 60 selected seventh grade students (27.2 percent) of the remaining students who were not part of the interdisciplinary team. Twenty-five team students were excluded from the study because they were identified as gifted-talented students and therefore might bias the results.

Data collection instruments

There were seven data collection instruments used in this investigation:

- The results of the *Ohio Practice Proficiency Test* were used to compare teamed and nonteamed students' academic achievement.
- Office disciplinary referral records were used to compare teamed and nonteamed students' discipline problems.
- School attendance records were used to compare

teamed and nonteamed students' school attendance.

- Questionnaires were given to teamed and traditional group students and their parents. The questionnaires were Likert scale instruments designed to survey attitudes.
- Questionnaires were given to parents of teamed and nonteamed students to survey their attitudes toward the school.
- Questionnaires were given to teachers of both the team and control group. The questionnaires were Likert scale instruments designed to measure teacher satisfaction with teaching and committment to professional development.
- Office records of the professional development hours earned by team and nonteamed teachers were used to compare the professional development of teachers in the two groups.

All surveys were designed following the guidelines set forth by Schurr (1992) and Best and Kahn (1993).

Data collection procedures

Data for this study were collected during the 1993-94 school year. Data from the *Ohio Practice Proficiency Test* were collected in March 1994. Data

from parent surveys was collected at Bridgeview Middle School on April 7 & 8, 1994 during parent-teacher conferences. All other data regarding student discipline, student attendance, student attitudes, teacher satisfaction, and teacher commitment to professional development were collected in May and June 1994.

Variables

The independent variable in this investigation is the grouping of students into an interdisciplinary team.

The dependent variables in this study are the students' scores on the *Ohio Practice Proficiency Test*, students' office discipline referrals, students' suspensions, students' attendance, and attitudes of students, parents, and teachers.

Statistical treatment

Analysis of Variance (ANOVA) was used regarding data collected from the *Ohio Practice Proficiency Test*, office disciplinary referrals, and attendance records. The unit of analysis is the mean. When comparing two groups it is possible that every score or opinion will vary. This variance could be caused by differences

among the students, different treatments, and test error. Even the Hawthorn Effect could be a cause of the variance. ANOVA enables researchers to compare variance due to these and other causes and determine which variances are statistically significant. In ANOVA, the test of statistical significance is the *F-test.*

All cases in this study involve a comparison of two groups receiving different treatment in their educational delivery systems yet they received the same measurement instruments. The statistical reliability of teachers' professional development records was tested using *Chi Square* tests.

These methods are useful in studying problems in education and other behavioral sciences to determine statistical significance. Although we used two student groups of sixty individuals, there could still be sampling error because of the use of nonrandomized selection. Information on the use of statistics came from Best and Kahn (1993) and Borg (1987). The instrument used to compute and compile the statistics is Quattro Pro spreadsheet software (Borland, 1993). The alpha level selected for this study is .05, the level generally employed in educational research (Best

& Kahn, 1993).

Summary of Methodology

Two groups of 60 seventh grade students at Bridgeview Middle School, their parents and their teachers were sampled. The groups were similar in all aspects except for their academic delivery system. One group was organized into an interdisciplinary team for four periods while the other group (control) was organized in the traditional departmentalized method for the four periods. Test scores, discipline records, attendance records, and attitude surveys were collected from the team and the control group and compared. Likert Scale surveys were also given to the parents and teachers of both groups and these were compared.

CHAPTER IV

Results of the Study

This chapter includes descriptions of the participants, results of *t* tests and analysis of variance (ANOVA) carried out to determine group equivalency. It also includes the results of testing the hypotheses which guided this study and the statistical data for each of the seven hypotheses. The alpha level for this study was set at 0.05.

Demographic Profile of Study Participants

This study took place during the 1993-94 school year at Bridgeview Middle School in Sidney, Ohio. The student population for this study came from a total group of 318 seventh grade students. Two groups of 60 students (36.3 percent of the total enrolled in the seventh grade) were selected using Quattro Pro 5.0 spreadsheet software (Borland, 1993). Sixty seventh grade students were selected from an interdisciplinary team to form an experimental group. A second, the control group, was composed of 60 selected seventh grade students (27.2 percent) of the remaining students who were not part of the interdisciplinary team. The parent population was comprised of parents of the

experimental group and parents of the control group. The teacher population was comprised of the five teachers of the interdisciplinary team and an equal number of seventh grade teachers who taught in a traditional departmentalized organization.

Results of Hypothesis 1.

Hypothesis 1 states the following:

> Seventh grade students who are in an interdisciplinary team will show greater academic achievement than seventh grade students in a traditional departmentalized organization. The null hypothesis becomes there will be no significant differences between the achievement measures of the experimental and control group.

In regard to this hypothesis two statistical tests were run to test the null hypothesis. An *ANOVA: one way* and a *t-test: two sample assuming equal variance* were run. Statistical significant differences in academic achievement was found between the experimental group and the control group (See Tables 1 & 2).

Table 1

Results of Hypothesis 1 (Reading).

Hypothesis 1:
Seventh grade students who are in an interdisciplinary team will show greater academic achievement than seventh grade students in a traditional departmentalized organization.

Analysis of Variance: One Way

Groups	**Count**	**Sum**	**Average**	**Variance**
Experimental	60	4439	72.770	98.879
Control	60	4048	66.360	168.734

Source of variation

	SS	**df**	**MS**	***F-crit***
Between Groups	1253.123	1	1253.123	3.920*
Within Groups	16056.852	120	133.807	
Total	17309.975	121		

t-Test Two Sample Assuming Equal Variance

	Variable 1	**Variable 2**
Mean	72.770	66.360
Variance	98.879	168.734
Observations	60	60
Pooled Variance	133.807	
Hypothesized Mean Difference	0	
df	120	
t Critical one-tail	1.657*	
t Critical two-tail	1.979*	

Critical F value = 3.92

Critical t value, one-tail = 1.658

Critical t value, two-tail = 1.980

*statistically significant at the .05 level

Table 2

Results of Hypothesis 1 (Math).

Hypothesis 1:
Seventh grade students who are in an interdisciplinary team will show greater academic achievement than seventh grade students in a traditional departmentalized organization.

Analysis of Variance: One Way

Groups	**Count**	**Sum**	**Average**	**Variance**
Experimental	60	3483	57.098	318.923
Control	60	3142	51.508	200.621

Source of variation

	SS	**df**	**MS**	***F-crit***
Between Groups	953.123	1	953.123	3.920*
Within Groups	31172.656	120	259.772	
Total	32125.779	121		

t-Test Two Sample Assuming Equal Variance

	Variable 1	**Variable 2**
Mean	57.098	51.508
Variance	318.923	200.621
Observations	60	60
Pooled Variance	259.772	
Hypothesized Mean Difference	0	
df	120	
t Critical one-tail	1.6576*	
t Critical two-tail	1.9799*	

Critical F value = 3.92

Critical t value, one-tail = 1.658

Critical t value, two-tail = 1.980

*statistically significant at the .05 level

Results of the *ANOVA test* and *t test* showed equivalency between the two groups on the results of the scores between the experimental and control groups taking the seventh grade Ohio Practice Proficiency Tests in reading and math. In reading, the mean score for the experimental group was 72.770 percent and the mean score for the control group was 66.360 percent. In math, the mean score for the experimental group was 57.098 percent and the mean score for the control group was 51.508 percent.

Results of the *ANOVA test* showed equivalency between the two groups. At *df*=120, the critical F value needed to reject the null hypothesis was 3.92. The critical F value was 3.920 allowing the null to be rejected.

Results of the *t test* also showed equivalency between the two groups on the results of the scores between the experimental and control groups. At *df*=120, the t value needed to reject the null hypothesis was 1.658 for a one-tail test and 1.980 for a two-tail test. The critical t value: one-tail is 1.657 and the critical value: two-tail is 1.979, thus allowing the null to be rejected.

Results of Hypothesis 2

Hypothesis 2 states the following:

> Seventh grade students who are in an interdisciplinary team will have fewer office referrals and suspensions than seventh grade students who are in a traditional departmentalized organization.
>
> The null hypothesis thus becomes there will be no significant difference between the office referrals and suspensions of the experimental and control groups.

In regard to this hypothesis two statistical tests were run to test the null hypothesis. An *ANOVA: one way* and a *t test: two sample assuming equal variance* were run. It was found that there were statistically significant differences in the number of office referrals for discipline between the experimental group and the control group (See tables 3 & 4).

Results of the *ANOVA* test and *t test* showed equivalency between the two groups on the results of the number of office referrals between the experimental and control groups. Results of the *ANOVA* test showed equivalency between the two groups. At df=120, the

Table 3

Results of Hypothesis 2.

Hypothesis 2:
Seventh grade students who are in an interdisciplinary team will have fewer office referrals and suspensions than seventh grade students in a traditional departmentalized organization.

Analysis of Variance: One Way

Groups	**Count**	**Sum**	**Average**	**Variance**
Experimental	60	18	0.261	2.343
Control	60	86	1.246	20.894

Source of variation

	SS	**df**	**MS**	***F-crit***
Between Groups	33.507	1	33.507	3.9107*
Within Groups	1580.116	120	11.619	
Total	1613.623	121		

t-Test Two Sample Assuming Equal Variance

	Variable 1	**Variable 2**
Mean	.261	1.246
Variance	2.343	20.894
Observations	60	60
Pooled Variance	11.619	
Hypothesized Mean Difference	0	
df	120	
t Critical one-tail	1.6561*	
t Critical two-tail	1.9776*	

Critical F value = 3.92

Critical t value, one-tail = 1.658

Critical t value, two-tail = 1.980

*statistically significant at the .05 level

Table 4

Composite of Office Referrals

Referrals / Non Suspensions	Team	Control
Total Referrals	42	125
Total Number of Students Referred	28	43
Percentage of Total Referrals	25%	75%
Referrals / Suspensions		
Number of Suspensions	4	18
Percentage of Suspensions	18.2%	81.8%
Different Students Suspended	2	4
Number of Suspension days	18	86
Days Out-of-School Suspension	10	81
Days In-School Suspension	8	5

critical F value needed to reject the null hypothesis is 3.92. The critical F value was 3.9107, allowing the null to be rejected.

Results of the *t test* also showed equivalency between the two groups on the results of the number of office referrals between the experimental and control groups. At df=120, the t value needed to reject the null hypothesis is 1.658 for a one-tail test and 1.980

for a two-tail test. The critical t value: one-tail was 1.657 and the critical value: two-tail was 1.979, thus allowing the null hypothesis to be rejected.

Results of Hypothesis 3

Hypothesis 3 states the following:

> Seventh grade students who are in an interdisciplinary team will have better attendance than seventh grade students in a traditional departmentalized organization. Thus, the null hypothesis becomes there will be no significant difference in the attendance of the experimental and control groups.

In regard to this hypothesis, two statistical tests were run to test the null hypothesis. An *ANOVA: one way* and a *t test: two sample assuming equal variance* were run. It was found there were statistically significant differences in attendance between the experimental group and the control group (See Table 5).

Results of the *ANOVA* test and *t test* showed equivalency between the two groups on the results of attendance between the experimental and control groups. The mean number of absences for the experimental group was 8.15 days of absence and the mean number of absences for the control group was 10.35 days of absence.

Table 5

Results of Hypothesis 3.

Hypothesis 3:
Seventh grade students who are in an interdisciplinary team will have better attendance than seventh grade students in a traditional departmentalized organization.

Analysis of Variance: One Way

Groups	**Count**	**Sum**	**Average**	**Variance**
Experimental	60	562.5	8.512	82.789
Control	60	714	10.348	173.105

Source of variation

	SS	**df**	**MS**	***F-crit***
Between Groups	166.321	1	166.321	3.9107*
Within Groups	17400.8	120	127.947	
Total	17567.13	121		

t-Test Two Sample Assuming Equal Variance

	Variable 1	**Variable 2**
Mean	8.152	10.348
Variance	82.789	173.105
Observations	60	60
Pooled Variance	127.947	
Hypothesized Mean Difference	0	
df	120	
t Critical one-tail	1.6561*	
t Critical two-tail	1.9776*	

Critical F value = 3.92

Critical t value, one-tail = 1.658

Critical t value, two-tail = 1.980

*statistically significant at the .05 level

Results of the ANOVA test showed equivalency between the two groups. At df=120, the critical F value needed to reject the null hypothesis was 3.92. The critical F value was 3.911 allowing the null hypothesis to be rejected.

Results of the *t* test also showed equivalency between the two groups. At *df*=120, the t value needed to reject the null hypothesis was 1.658 for a one-tail test and 1.980 for a two-tail test. The critical *t* value: one-tail is 1.656 and the critical *t* value: two-tail is 1.977, thus allowing the null hypothesis to be rejected.

Table 6

Results of Hypothesis 4.

Hypothesis 4:
Seventh grade students who are in an interdisciplinary team will have a more positive attitude toward school than seventh grade students in a traditional departmentalized organization.

Analysis of Variance: One Way

Groups	**Count**	**Sum**	**Average**	**Variance**
Experimental	50	201	4.02	0.754
Control	50	173	3.46	0.988

Source of variation

	SS	**df**	**MS**	***F-crit***
Between Groups	7.84	1	7.84	3.9381*
Within Groups	85.4	98	.8714	
Total	93.24	99		

t-Test Two Sample Assuming Equal Variance

	Variable 1	**Variable 2**
Mean	4.02	3.46
Variance	.7546	.9881
Observations	98	98
Pooled Variance	.7546	
Hypothesized Mean Difference	0	
df	98	
t Critical one-tail	1.6605*	
t Critical two-tail	1.9844*	

Critical F value = 3.946

Critical t value, one-tail = 1.6623

Critical t value, two-tail = 1.9866

*statistically significant at the .05 level

between the two groups. At *df*=98, the critical F value needed to reject the null hypothesis was 3.946. The critical F value was 3.9381 thus allowing the null hypothesis to be rejected.

Results of the *t* test also showed equivalency between the two groups. At *df*=98, the t value needed to reject the null hypothesis was 1.6623 for a one-tail test and 1.9866 for a two-tail test. The critical *t* value: one-tail is 1.6605 and the critical *t* value: two-tail is 1.9844, thus allowing the null hypothesis to be rejected.

Results of Hypothesis 5

Hypothesis 5 states the following:

> Parents of seventh grade students who are in an interdisciplinary team will have a more positive attitude toward the school than those parents of seventh grade students in a traditional departmentalized organization. The null hypothesis thus becomes there will be no significant difference in the attitudes of students' parents in the experimental group and students' parents in the control group.

In regard to this hypothesis, two statistical tests were run to test the null hypothesis. An *ANOVA: one way* and a *t test: two sample assuming equal variance* were run. It was found there were statistically significant differences in parent attitudes between the experimental group and the control group (See Table 7).

Results of the *ANOVA* test and the *t* test showed equivalency between the two groups on the results of the parents' attitudes between the parents of the experimental group and the parents of the control

Table 7

Results of Hypothesis 5.

Hypothesis 5:

Parents of seventh grade students who are in an interdisciplinary team will have a more positive attitude toward the school than parents of seventh grade students in a departmentalized organization.

Analysis of Variance: One Way

Groups	**Count**	**Sum**	**Average**	**Variance**
Control	40	169	3.93	0.692
Experimental	40	178	4.45	0.988

Source of variation	**SS**	**df**	**MS**	**F-*crit***
Between Groups	1.0125	1	1.0125	3.9635*
Within Groups	38.875	78	0.4983	
Total	39.8875	79		

t-Test Two Sample Assuming Equal Variance

	Variable 1	**Variable 2**
Mean	3.93	4.45
Variance	.6916	.3051
Observations	40	40
Pooled Variance	.4983	
Hypothesized Mean Difference	0	
df	78	
t Critical one-tail	1.6646*	
t Critical two-tail	1.9908*	

Critical F value = 3.973

Critical t value, one-tail = 1.666

Critical t value, two-tail = 1.993

*statistically significant at the .05 level

group. Fourteen questions were asked of the parents of the students and the results were compared individually question by question. The statistical data was consistent in all fourteen cases.

Results of the ANOVA test showed equivalency in each case between the two groups. AT *df*=78, the critical F value needed to reject the null hypothesis was 3.973. The critical F value was 3.9635 thus allowing the null hypothesis to be rejected.

Results of the *t* test also showed equivalency in each case between the two groups. At *df*=78, the T value needed to reject the null hypothesis was 1.666 for a one-tail test and 1.993 for a two-tail test. The critical *t* value: one-tail is 1.664 and the critical *t* value: two-tail is 1.991, thus allowing the null hypothesis to be rejected.

Results of Hypothesis 6

Hypothesis 6 states the following:

> Teachers working in an interdisciplinary team will evidence greater satisfaction with teaching than teachers working in a departmentalized setting. The null hypothesis thus becomes there will be no difference in satisfaction of teaching among teachers in the experimental group and teachers in the control group.

In regard to this hypothesis, two statistical tests were run to test the null hypothesis. The tests were run on the sum of the scores for each question by the teachers sampled. An *ANOVA: one way* and a *t test; two sample assuming equal variance* were run, the latter being the more important of the two tests. It was found there were statistically significant differences in teacher satisfaction with teaching between teachers in the experimental group and teachers in the control group (See Table 8).

Results of the *ANOVA* test and *t* test showed equivalency between the two groups on the results of the teachers' satisfaction with teaching between the

Table 8

Results of Hypothesis 6.

Hypothesis 6:
Teachers working in an interdisciplinary team will evidence greater satisfaction with teaching than teachers working in a departmentalized setting.

Analysis of Variance: One Way

Groups	**Count**	**Sum**	**Average**	**Variance**
Experimental	20	458	22.9	5.358
Experimental	20	353	17.65	17.187

Source of variation

	SS	**df**	**MS**	***F-crit***
Between Groups	275.625	1	275.625	4.098 *
Within Groups	428.35	38	11.272	
Total	703.975	39		

t-Test Two Sample Assuming Equal Variance

	Variable 1	**Variable 2**
Mean	10.5	22.9
Variance	35	5.358
Observations	20	20
Pooled Variance	34.281	
Hypothesized Mean Difference	0	
df	40	
t Critical one-tail	1.683*	
t Critical two-tail	2.021*	

Critical F value = 4.098

Critical t value, one-tail = 1.684

Critical t value, two-tail = 2.021

*statistically significant at the .05 level

teachers in the experimental group and teachers in the control group. Twenty questions were compared both individually and by comparing the sum of the scores of the teachers surveyed. The statistical data was consistent in all cases.

Results of the *ANOVA* test showed equivalency in each case between the two groups. At *df*=38, the critical F value needed to reject the null hypothesis was 4.098. The critical F value was 4.098, thus allowing the null hypothesis to be rejected by the narrowest of margins.

Results of the *t* test also showed equivalency between the two groups. At *df*=40, the *t* value needed to reject the null hypothesis was 1.684 for a one-tail test and 2.021 for a two-tail test. The critical *t* value: one-tail is 1.683 and the critical t value: two-tail is 2.021, thus allowing the null hypothesis to be rejected.

Results of Hypothesis 7

Hypothesis 7 states the following:

> Teachers working in an interdisciplinary team will have a greater commitment to professional development than teachers working in a departmentalized setting. Thus, the null hypothesis becomes there will be no difference in professional development among teachers in the experimental group and teachers in the control group.

In regard to this hypothesis a Chi Square (χ^2) test was run to test the null hypothesis. It was found there were statistically significant differences in teacher commitment to professional development between teachers in the experimental group and teachers in the control group (See Table 9).

Results of the χ^2 test showed equivalency between the two groups on the results of recording the hours of professional development between teachers in the experimental group and teachers in the control group.

Results of the χ^2 test showed equivalency between the two groups. At df=2, the χ^2 critical value for .05 is 5.91 and the χ^2 critical value for .01 is 9.21. The

χ^2 critical value was 7.67, indicating significance at the .05 level. Thus, the null hypothesis is rejected.

Table 9

Results of Hypothesis 7.

Hypothesis 7:
Teachers working in an interdisciplinary team will have a greater commitment to professional development than teachers working in a departmentalized setting.

Analysis of Chi Square 2x2

Ranges of Hours	0-49	50-99	100-149	Sum
Experimental	1(3)	2(1)	2(1)	5*
Control	5(3)	0(1)	0(1)	5*
Totals	6**	2**	2**	10*
			Grand Total	10

*Σf row
**Σf column
Numbers represent the actual observed frequencies f_0
Numbers in parentheses represent the expected frequencies f_e
χ^2 = 7.67*
Critical χ^2 value at .05 = 5.99
Critical χ^2 value at .01 = 9.21
*statistically significant at the .05 level

Summary

This study included 60 students in the experimental group and 60 student in the control group. Also involved were parents of these students as well as the five teachers in the experimental group and five teaches in the control group.

The dependent variables in this study were the students' scores on the *Ohio Practice Proficiency Test*, office discipline referrals, suspensions, attendance, and attitudes of students, parents, and teachers.

Statistical tests on the data collected were conducted using *ANOVA* tests, *t* tests, and *Chi Square* tests. Statistically significant difference were found in the comparison of all seven hypotheses.

Hypothesis 1:

Statistically significant differences in academic achievement in reading and math were achieved by students in the experimental group as compared to students in the control group. Students in the experimental group had significantly higher scores on the Ohio Practice Proficiency Test in reading and math than did students in the control group.

Hypothesis 2:

Statistically significant differences in office referrals and suspensions for discipline problems were achieved by students in the experimental group as compared to those students in the control group. Students in the experimental group had significantly fewer office referrals and suspensions than did students in the control group.

Hypothesis 3:

Statistically significant differences in school attendance were achieved by students in the experimental group as compared to students in the control group. Although the rate of attendance for the entire school was lower than required for designation as an exemplary school, it was significantly higher in the experimental group than in the control group.

Hypothesis 4:

Statistically significant differences in students' attitude toward school were found when the attitudes toward school of students in the experimental group were compared with the attitudes toward school of students in the control group. The attitudes of students in the experimental group were significantly more positive toward school than attitudes of the

students in the control group.

Hypothesis 5:

Statistically significant differences in parents' attitudes toward school were found when the attitudes toward school of the parents of the experimental group were compared with those of the control group. The attitude toward school of parents whose children were in the experimental group were significantly more positive than the attitude toward school of those parents whose children were in the control group.

Hypothesis 6:

Statistically significant differences in teachers satisfaction with teaching were found when teachers teaching in the interdisciplinary team were compared with teachers teaching in the traditional departmentalized organization. Teachers in the interdisciplinary team had significantly greater satisfaction with teaching than teachers teaching in a traditional departmentalized organization.

Hypothesis 7:

Statistically significant differences in teacher professional development were found when teachers in an interdisciplinary team were compared with teachers in

the traditional departmentalized organization. teachers in the interdisciplinary team accumulated a significantly greater number of professional development hours than teachers in the traditional departmentalized organization.

CHAPTER V

Summary, Conclusions, and Implications

This chapter is presented in four sections: summary, conclusions, implications, and recommendations for further research.

Summary of the Study

This study investigated the influence of an interdisciplinary team organization on a group of seventh grade students by comparing them with a group of seventh grade students organized in a traditional departmentalized organization. The study also compared parent attitudes toward school, teacher satisfaction and interest in professional development of teachers. Seven hypotheses were studied during this project and each will be discussed in turn.

The interdisciplinary team was composed of five teachers and 110 seventh grade students. The subject areas were math, language arts, science and social studies. The five teachers shared a common block of time consisting of the first four periods of the school day. Within this block of time, the team teachers were free to schedule classes as they saw fit. This was the first year for this type of organization at Bridgeview

Middle School. This pilot program was initiated as a result of a grant received by the school.

Student Academic Achievement

All seventh grade students in the school took the Ohio Practice Proficiency Test in March 1994. The results of this test in math and reading were used in this comparison study. There was a significant difference in the scores in math and reading between the experimental (team) group and the control group. The average score in reading for the experimental group was 72.77 percent while the average reading score for the control group was 66.36 percent. Statistical tests indicate this difference to be significant. Likewise, the average score in math for the experimental group was 57.1 percent while the control group averaged 51.5 percent (see Figure 1, Appendix A). Again, statistical measurement indicated the results to be significant (see Chapter IV).

There was a significant improvement in academic achievement in reading and math for those students organized into an interdisciplinary team that shared a common block of time and teachers.

Office Referrals for Discipline

The purpose of this part of the study was to compare the behavior of the students in the experimental group and the students in the control group. Data on office referrals and suspensions were compared. Statistical tests applied to the data for this section indicated that significantly fewer students organized into an interdisciplinary team were referred to the office for discipline than were students organized into a traditional departmentalized plan. Students in the experimental (team) group had a total of 42 office referrals during the year. Students in the control group had a total of 125 office referrals. The total number of the experimental group students to be referred was 28 while the number of control group students was 43. Only eight students in the experimental group had more than one referral.

Office referrals for the experimental group comprised 14 percent of the total referrals from the seventh grade. The students in the control group accounted for 41 percent of the total referrals while the remainder of the seventh graders accounted for 35 percent of the office referrals. Clearly, the

discipline of students organized into the interdisciplinary team was significantly better than those students organized in the traditional manner.

The study looked at the more serious matter of suspensions resulting from office referrals. There was a total of 22 suspensions involving eight students in both groups. Of these 22, 4(18.2%) were of students in the experimental group and 18(81.8%) were of students in the control group. Two students in the experimental group were suspended while six students in the control group were suspended.

In terms of days of suspension, experimental group students served 18 days while control group students served 86 days. This computes to 17.3% and 82.7% respectively (see Figure 2, Appendix A).

The type of suspensions were also an interesting study. At Bridgeview, students and their parents have the option of choosing to serve a suspension either as an in-school suspension or an out-of-school suspension. Of the 18 days of suspension served by students in the experimental group, ten days were served out of school and eight days were served in school. Of the 86 days served by students in the control group only 5 were

served in school. The remaining 81 days were served out of school (see Figure 3, Appendix A). The findings regarding this variable agree with those of George & Oldaker (1986). They found a significantly lower rate of referrals and suspensions in 80% of the middle schools organized in interdisciplinary teams.

Student Attendance

The purpose of this part of the study was to compare the attendance of students in the experimental group with the attendance of students in the control group. Statistical tests applied to the data collected for this section indicated there was a significant difference between the two groups regarding their attendance. The total absences for the two groups studied equaled 1,276.5 days of school. Of this total 562.5 days or 44.07% were accounted for by the experimental group. The control group accounted for 714 days or 55.93% of absence. These totals break down to an average of 8.15 days of absence per student in the experimental group and 10.35 days of absence per student in the control group (see Figures 4 & 5, Appendix A). Absenteeism continues to be a problem in schools and Bridgeview is no exception. Nevertheless,

there were significantly fewer absences among the experimental students. These findings relate to conclusions drawn by George & Oldaker (1986). They concluded that 75% of middle schools organized into interdisiciplinary teams noted better attendance. Since their study included only schools that were organized entirely into interdisciplinary teams or entirely traditionally departmentalized, they reported that their findings could have resulted from the total atmosphere of the school rather than interdisciplinary teaming. The total school atmosphere for the experimental and control groups in this study was the same. This indicates that interdisciplinary teaming was the variable influencing student attendance.

Student Attitude Toward School

This section of the study dealt with the attitude toward school of students in the experimental group (team) compared to the attitude of students in the control group. Statistical tests applied (See Chapter IV) indicated a significant difference in the attitude of students in the experimental group compared to the attitude of students in the control group. A survey using a Likert scale was given to the students with 5

indicating "strongly agree" and 1 indicating "strongly disagree." Students were given an opportunity to express other opinions in a "Comments" section (see p. 116, Appendix B). The survey contained twenty statements that covered five areas:

- attitudes toward class work
- attitudes toward behavior and safety
- personal development(self-esteem)
- attitudes toward school
- attitudes toward staff

(see Figure 6, Appendix A).

Concerning their attitudes toward class work, students in the experimental group gave a rating of 4.015 while students in the control group gave a rating of 3.49 (see Figure 7, Appendix A). This is a significant difference between the two groups.

Concerning students' attitudes toward behavior, the students in the experimental group gave a rating of 2.96 while the students in the control group gave a rating of 2.41 (see Figure 8, Appendix A). The statistical analysis indicated the difference between these figures to be significant.

Four statements comprised the items related to

personal development and self-esteem. Students in the experiment group gave an over-all rating of 3.545 while those in the control group gave a rating of 3.1 (see Figure 9, Appendix A). It is important to note that those students in the experimental group felt better about themselves as it related to school than did those students who were in the control group.

Four questions also comprised the statements related to attitude toward the school staff. Members of the experimental group gave a ranking of 4.03 to items related to their teachers, counselors, tutors, and administrators. Students in the control group ranked these items at 3.315 (see Figure 10, Appendix A). This was a statistically significant difference.

The last cluster of items concerned student attitudes toward school. Students in the experimental group gave a rating of 3.885 for these four questions while students in the control group gave a rating of 3.125 (see Figure 11, Appendix A). This difference of .76 was the greatest difference of the five groups of items.

In studying this section, there was clearly a substantial difference in the attitudes of students in

the experimental group as compared to the attitudes of students in the control group. George and Oldaker (1986) reported similar results in their work.

Parent Attitudes Toward School

This section of the study compared parents' attitudes toward school. A survey using a Likert scale was administered to parents of both groups of students. The responses ranged from strongly agree (5) to strongly disagree (1). Parent comments were also collected and these are found in Appendix B, page 119.

Statistical tests applied to these surveys indicated significance. In only two of the fourteen questions were the responses the same for both the parents of the experimental group and the parents of the control group. The two questions referred to the social opportunities students have at school and the fact that the parents felt welcomed at school. These two responses were not directly impacted by interdisciplinary teaming. For one statement, "There seems to be good discipline on school grounds," the parents of the experimental group ranked their response lower (3.73) than the control group (3.75). Three questions yielded very large differences in response.

To the statement, "Teachers work well together at Bridgeview," the parents of the experimental group gave a ranking of 4.18 while parents of the control group gave a ranking of 3.85. In response to whether parents view the team organization positively or negatively, parents of the experimental group gave a ranking of 4.38 while parents of the control group gave a ranking of 3.35, the lowest in the survey. The last of the items showing the greatest margin of difference was, "I feel the new team organization at Bridgeview is good for students." Parents of students in the experimental group gave an approval rating of 4.45, the highest in the survey. Parents of the control group gave at rating of 3.5, the second lowest (see Figure 12, Appendix A). Reasons for these differences will be discussed in the implications section.

Teacher Satisfaction

This section of the study compared the satisfaction teachers had toward their job between teachers in the interdisciplinary team and those teaching in the traditional departmentalized organization.

A Likert scale survey of twenty questions was

administered to teachers of the experimental group and teachers of the control group. The responses ranged from strongly agree (5) to strongly disagree (1). The individual scores of the teachers were added and both the sum and the individual score were statistically analyzed.

Statistical tests applied to these surveys indicated significance. The teachers in the experimental group had an average of 4.5 out of a possible five for an approval rating of 90 percent. This indicated a significant degree of satisfaction with their job of teaching. Teachers in the control group had a ranking of 3.53 out of a possible five for an overall approval rating of 70.6 percent. A difference of 19.4 percent indicates significant difference in job satisfaction between the teaches in the experimental group and teachers in the control group. These findings were similar to those seen by Walsh and Shay (1993) as they found that teachers on the interdisciplinary teams had increased job satisfaction.

Four questions had a larger discrepancy from the other sixteen questions. These four concerned the

topics of:

- flexibility of time to work with students,
- freedom to modify student's schedules if necessary,
- parent contact,
- discipline on school grounds,

(see Figure 13, Appendix A).

Teachers in the experimental group gave these questions a ranking of 4.3 out of five for an approval rating of 86 percent. Teachers in the control group gave these same questions a ranking of 2.3 out of five for an approval rating or 46 percent. A difference of 40 percent indicated teachers in the experimental group felt they have a lot more flexibility than did teachers in the control group. They also felt they had much greater parent contact. These, of course, were the reasons for organizing into teams of students and teachers.

Three questions had to do directly with the team organization and support of the middle school philosophy as discussed in the review of literature chapter. Not surprisingly, the teachers in the experimental group strongly agreed and gave an overall

ranking of five for an approval rating of 100 percent. Teachers in the control group agreed and gave a ranking of four for an approval rating of 80 percent. There appears to be good support for teaming and the middle school philosophy among teachers not involved in the interdisciplinary team.

One question ranked low by both groups concerned teacher input regarding critical decisions made at school. Both groups gave an approval rating of just over 50 percent indicating a considerable number of teachers felt left out of the decision process (See Appendix C, pg. 128 for the Questionnaire).

Teacher Professional Development

This section of the study compared the number of hours of professional development of teachers in the experimental group with the number of hours of professional development of teachers in the control group. The teachers in the experimental group averaged 68.9 hours of professional development during the 1993-94 school year as compared to 31.9 hours for teachers in the control group (see Figure 14, Appendix A). The minimum number of hours required was 12 hours per teacher.

Professional development hours indicated a significant difference between the experimental group and the control group. Teachers in the experimental group did attend some conferences related directly to the interdisciplinary teaming and its process. However, even without these hours, teachers in the experimental group still averaged more hours than the teachers in the control group (see Figure 15, Appendix A).

Procedures

The data for this study was generated by seven instruments:

- The results of the *Ohio Practice Proficiency Test* were used to compare teamed and nonteamed students' academic achievement.
- Office disciplinary referral records were used to compare teamed and nonteamed students' discipline problems.
- School attendance records were used to compare teamed and nonteamed students' attendance.
- Questionaires were administered to teamed and traditionally grouped students and their parents. The questionaires were Likert scale instruments designed to survey attitudes.

- Two questionaires were given to teachers of both the experimental and control groups. The questionaires were Likert scale instruments designed to measure teacher satisfaction with teaching and committment to professional development.

Data was collected during the 1993-94 school year. Data from the *Ohio Practice Proficiency Test* was collected in March, 1994. April 7 & 8, 1994 during parent-teacher conferences was the collection time for data about parent attitudes. All other data regarding student discipline, student attendance, student attitudes, teacher satisfaction and teacher committment to professional development was collected in May and June, 1994. Tests of statistical significance were applied to each of the seven hypotheses.

Conclusions and Discussion

Conclusions related to each of the seven hypotheses have been presented in the first part of this chapter. The central issue focused on this study was that the middle school philosophy of organizing a middle school into interdisciplinary teams and all that

is a part of teaming (cooperative learning, block scheduling, etc.) would have a positive effect on students' learning, behavior, attendance, and attitudes. Likewise, this philosophy and method of organization would have a positive effect on the attitudes of parents, teacher satisfaction, and the professional development of teachers.

There was a statistically significant difference in all the above areas between students, parents, and teachers organized into an interdisciplinary team as compared to students, parents, and teachers organized in the traditional departmentalized manner. These findings are consistent with George and Oldaker's work in 1986 showing the value of organizing middle schools into interdisciplinary teams (George & Oldaker, 1986). These findings speak to the need for expanding this pilot study to encompass the entire school.

Major conclusions can be drawn from this study:

- Interdisciplinary teaming caused seventh grade students to perform significantly better in math and reading than their counterparts in the traditional organization.
- Interdisciplinary teaming caused significantly

better student attendance for teamed students compared to students in the traditional organization.

- Interdisciplinary teaming caused students to experience significantly fewer discipline problems than students in the traditional organization.
- Interdisciplinary teaming caused team students and their parents to have more positive attitudes toward school than did students and parents in the traditional organization.
- As a result of teaming a collegiality and feeling of professionalism occurred among teachers. This was demonstrated by greater satisfaction with the teaching profession and increased interest in professional development.

Implications

The review of literature to support this study pointed out the critical nature of the middle school philosophy and its effects on students in early adolescence. The findings of this study support previous studies in general and specific ways. The early adolescent years may be the most critical in the

development of youth. The emphasis placed on schools to provide a caring learning environment increases in importance with declines in society. For many youth, the middle school years may well represent the turning point in their lives. The middle school philosophy of organizing into interdisciplinary teams enables schools to have smaller schools-within-schools and to enhance the feeling of community that is vitally important to these youth.

This study has indicated that significant positive changes in student academic achievement, attendance, discipline and attitude occurred at Bridgeview Middle School as a result of reorganizing into an interdisciplinary team. Corresponding positive changes also occurred in parental attitudes toward school, teachers' satisfaction with teaching and the professional development of teachers. The implications of this study suggest that Bridgeview Middle School should procede with the utmost urgency to reorganize the entire school into interdisciplinary teams.

This study shows that teaming worked at Bridgeview. Concerns such as staff utilization, inservice, space, and time must be addressed. Financial

costs are a consideration in Sidney as well as across Ohio, but the results of this study indicate the reorganization should procede building-wide.

Another consideration is the need for increased staff inservice. Funds from the Venture Capital Grant awarded to Bridgeview Middle School should be used especially for those teachers not currently on an interdisciplinary team. Future hiring of teachers for Bridgeview should be done on the basis of interdisciplinary teaming and the middle school philosophy.

Another implication of the study is the development of middle school environments that encourage and maintain teacher-teacher and teacher-student relationships over a period of time. The success of this single year suggests that keeping teams together for both years at Bridgeview should be considered. Teachers would become more familiar with each student's academic potential, and students would know what is expected of them. They would be better prepared to meet the academic expectations of their team teachers.

The study provides evidence that interdisciplinary

teams develop a positive atmosphere for school work and for students' social interactions. An interdisciplinary team learning environment reduces feelings of isolation for students, produces clear expectations for learning, more positive attitudes toward school work and the emergence of a support network that is invaluable when dealing with the problems of middle school students.

Suggestions for Further Research

In the process of conducting this investigation, the following emerged as suggestions for further research.

- Carry out a similar study at Bridgeview Middle School as interdisciplinary teaming expands to include the entire building.
- Continue this study during the 1994-95 using the same student sample to determine the results over a longer span of time. The question of whether improvements in academic performance, attendance, discipline and student attitudes can be sustained over a long period of time needs to be addressed.
- Conduct a study of teacher satisfaction as the prime hypothesis to determine if teachers

organized into teams can significantly reduce teacher burnout and the feelings of isolation that often accompany teaching.

- Expand the study beyond interdisciplinary teaming to include group advisory periods, the effect of separate group planning time for teachers in a team, and effects on remediation practices.
- Study the effects of interdisciplinary teaming and other key middle school practices on students' motivation to learn, attitudes, and achievement.
- Study the effects on departmental cooperation which has traditionally been very strong in junior high schools.

Summary

This chapter began with a restatement of the problem and the research procedures utilized in this study. It was found that organizing Bridgeview Middle School into an interdisciplinary team did result in significant differences in students' academic achievement in reading and math, behavior, attendance, and attitudes. The study also revealed significant

differences in parental attitudes, teacher satisfaction and the professional development of teachers. Student scores in math and reading were significantly higher for students in the experimental group compared to the students in the control group. Discipline problems and absenteeism were significantly lower among students in the experimental group compared to students in the control group. At the same time, students' attitudes toward school were significantly better in the experimental group than in the control group. Also noted were more positive parent attitudes and greater teacher satisfaction and professional development for the experimental group.

The study has concluded that the reorganization of seventh grade students at Bridgeview Middle School into an interdisciplinary team may also relate to issues of motivation, self esteem, and confidence of students. Reduction of teacher isolation, a greater feeling of collegiality and improved professional development were seen as benefits to teachers.

The findings carry implications for the future organization of Bridgeview. The results support reorganizing into interdisciplinary teams as quickly as

possible. Restrictive factors such as some teacher reluctance and lack of funding need to be addressed. Utilizing existing staff, inservice, and hiring of new teachers committed to the middle school philosophy should be priority items for administration. A major ramification is communication and broad based involvement with the critical decisions affecting the school collectively and teachers and students individually.

APPENDICES

APPENDIX A

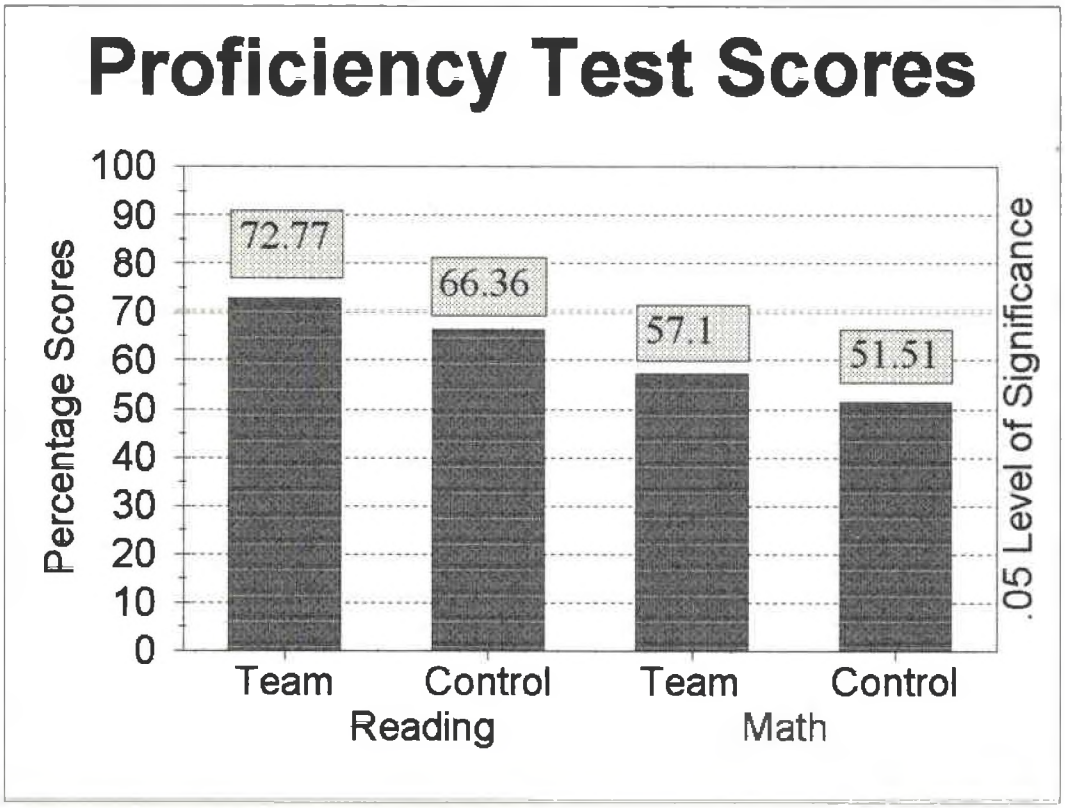
Proficiency Test Scores
Percentage Scores
100
90
80
70
60
50
40
30
20
10
0
72.77
66.36
57.1
51.51
Team
Control
Team
Control
Reading
Math
.05 Level of Significance

Figure 1

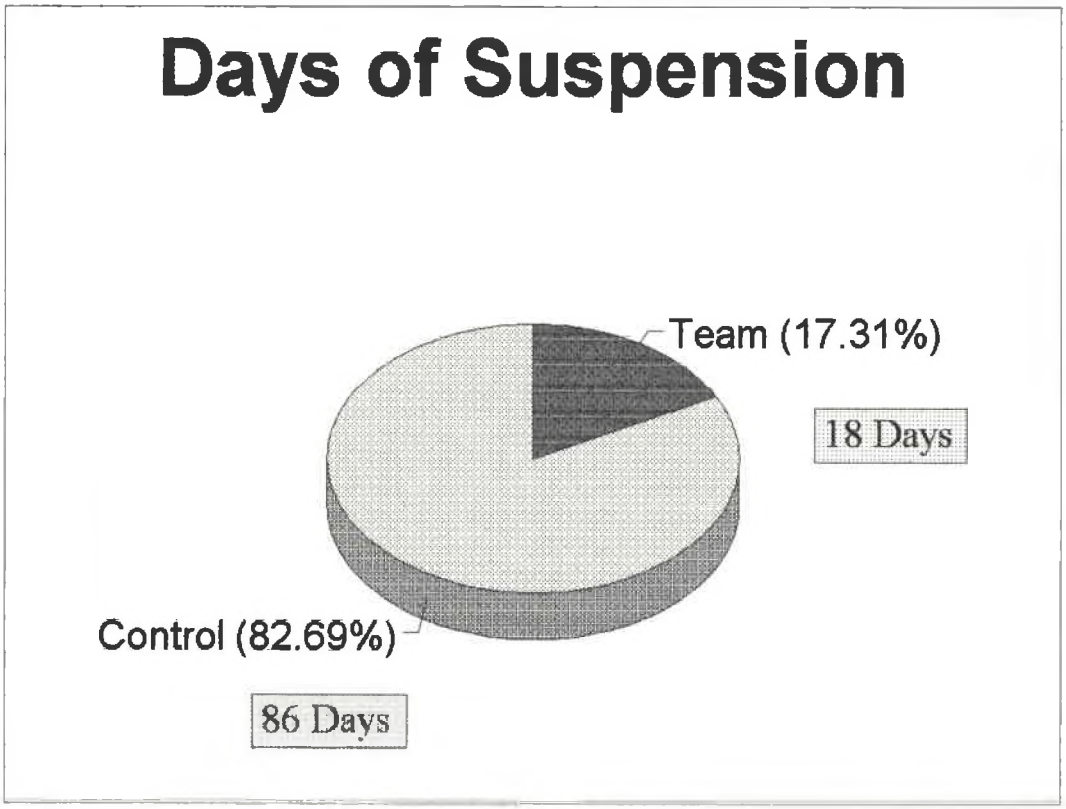

Figure 2

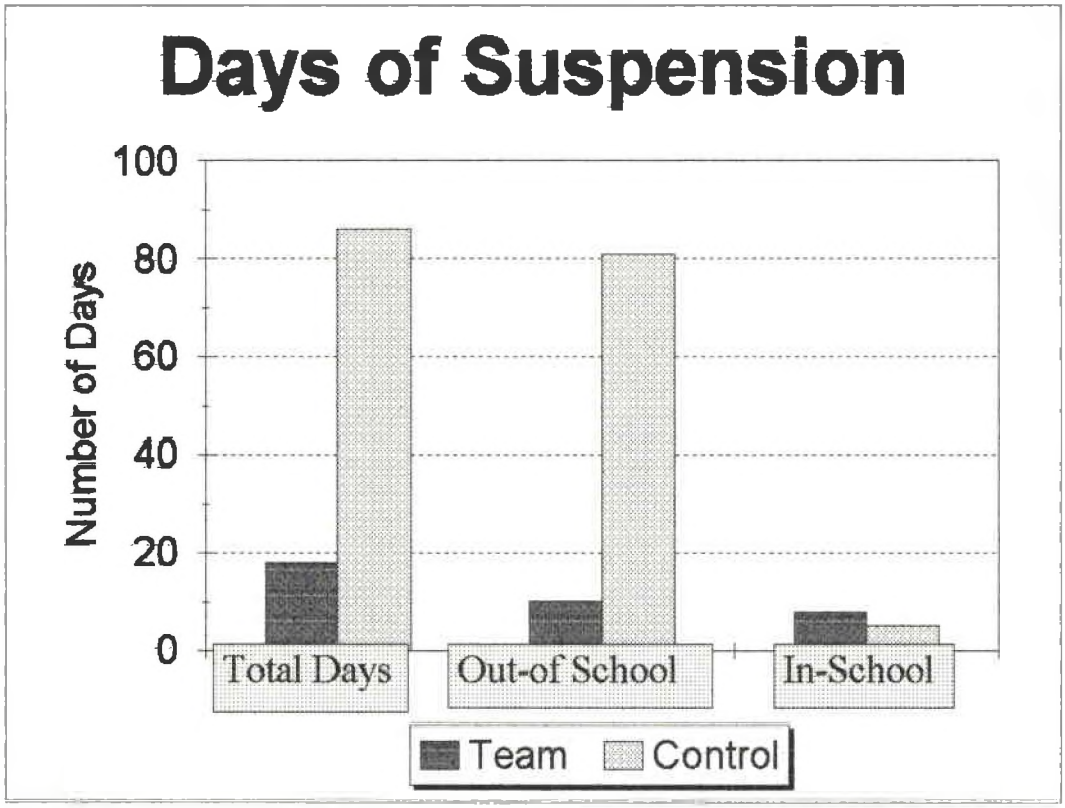
Days of Suspension
Number of Days
100
80
60
40
20
0
Total Days
Out-of School
In-School
Team
Control

Figure 3

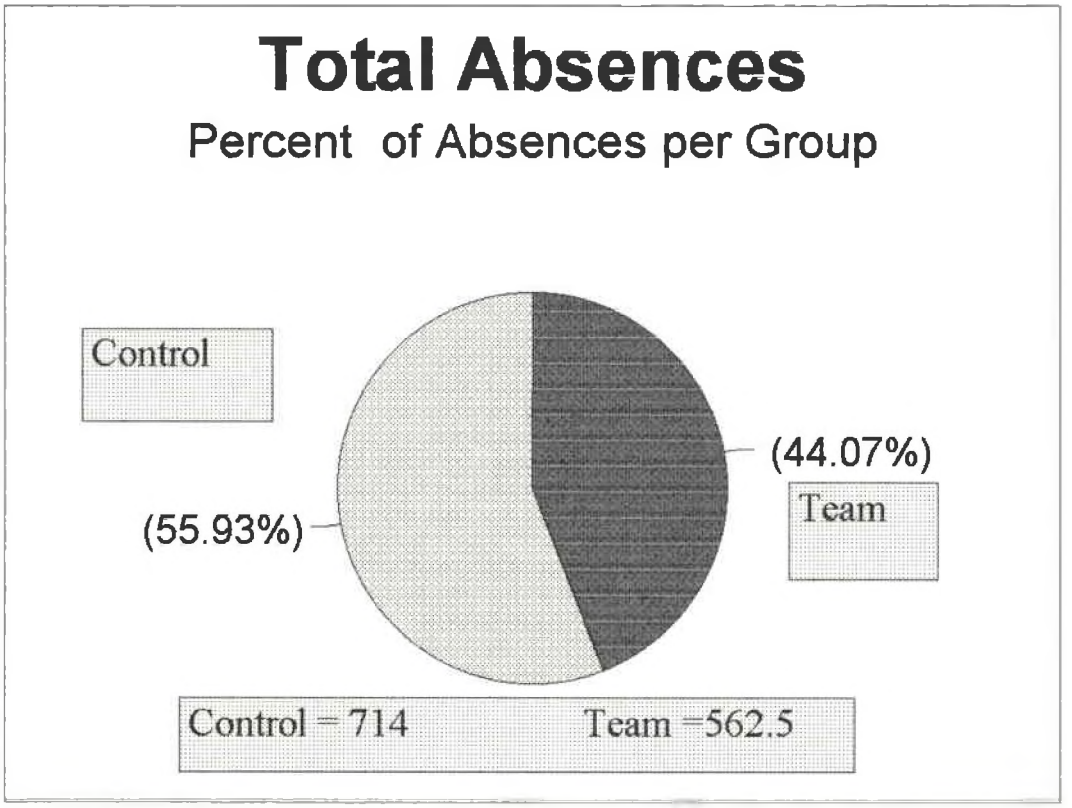
Total Absences
Percent of Absences per Group
Control
(55.93%)
(44.07%)
Team
Control = 714
Team =562.5

Figure 4

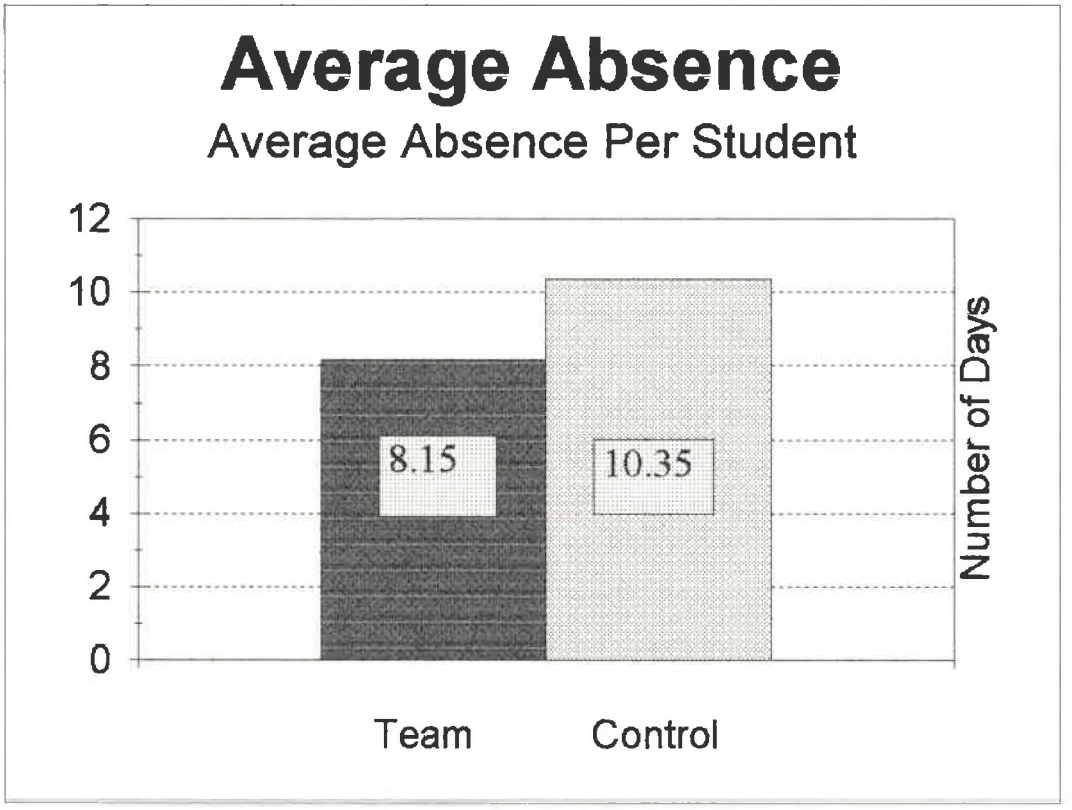
Average Absence
Average Absence Per Student
12
10
8
6
4
2
0
8.15
10.35
Number of Days
Team
Control

Figure 5

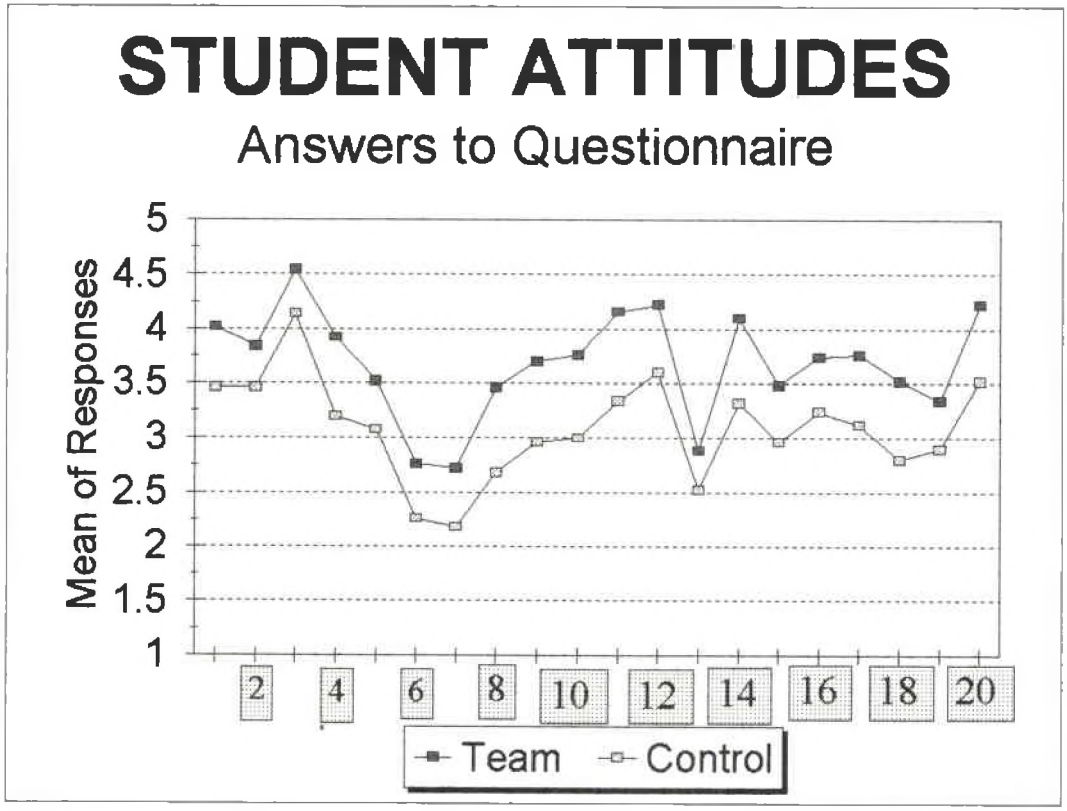
STUDENT ATTITUDES
Answers to Questionnaire
Mean of Responses
5
4.5
4
3.5
3
2.5
2
1.5
1
2
4
6
8
10
12
14
16
18
20
Team
Control

Figure 6

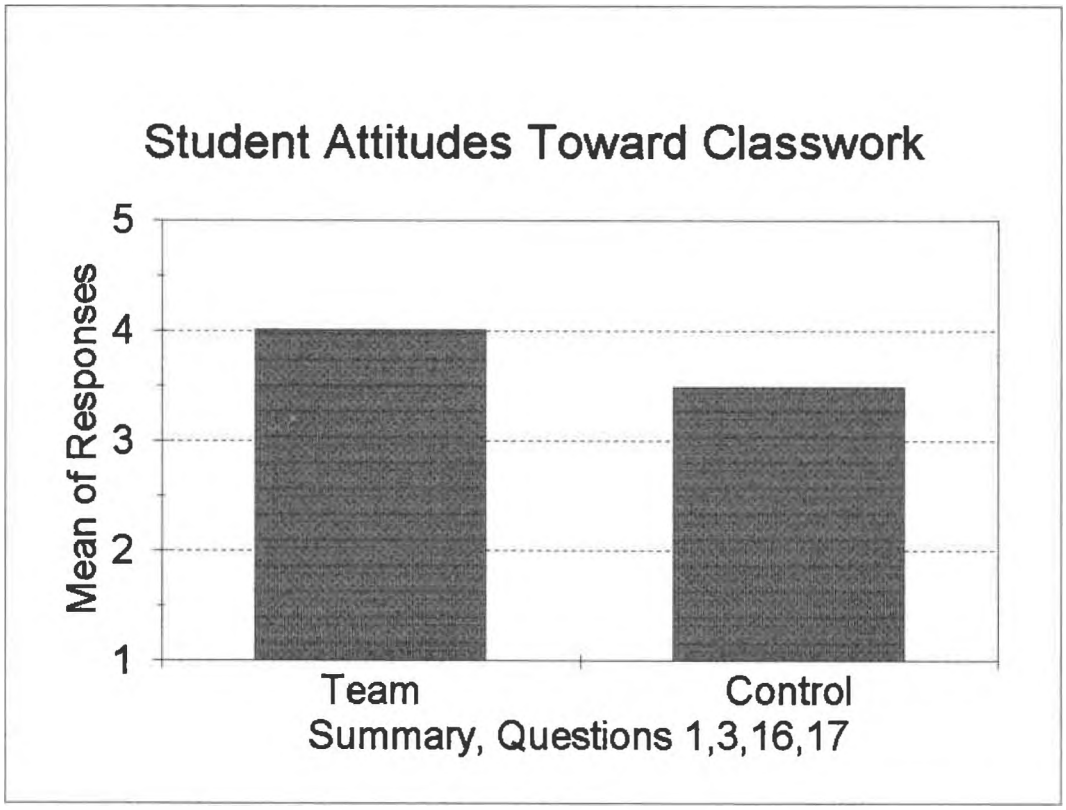
Student Attitudes Toward Classwork
Mean of Responses
5
4
3
2
1
Team
Control
Summary, Questions 1,3,16,17

Figure 7

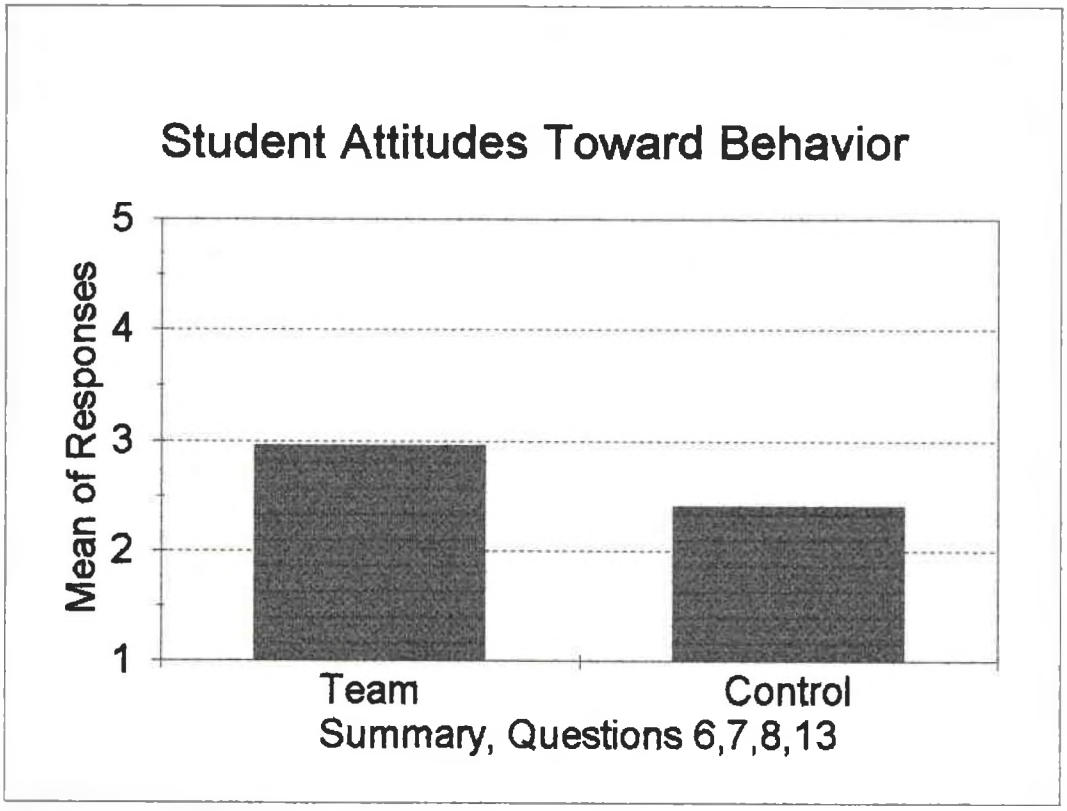
Student Attitudes Toward Behavior
Mean of Responses
5
4
3
2
1
Team
Control
Summary, Questions 6,7,8,13

Figure 8

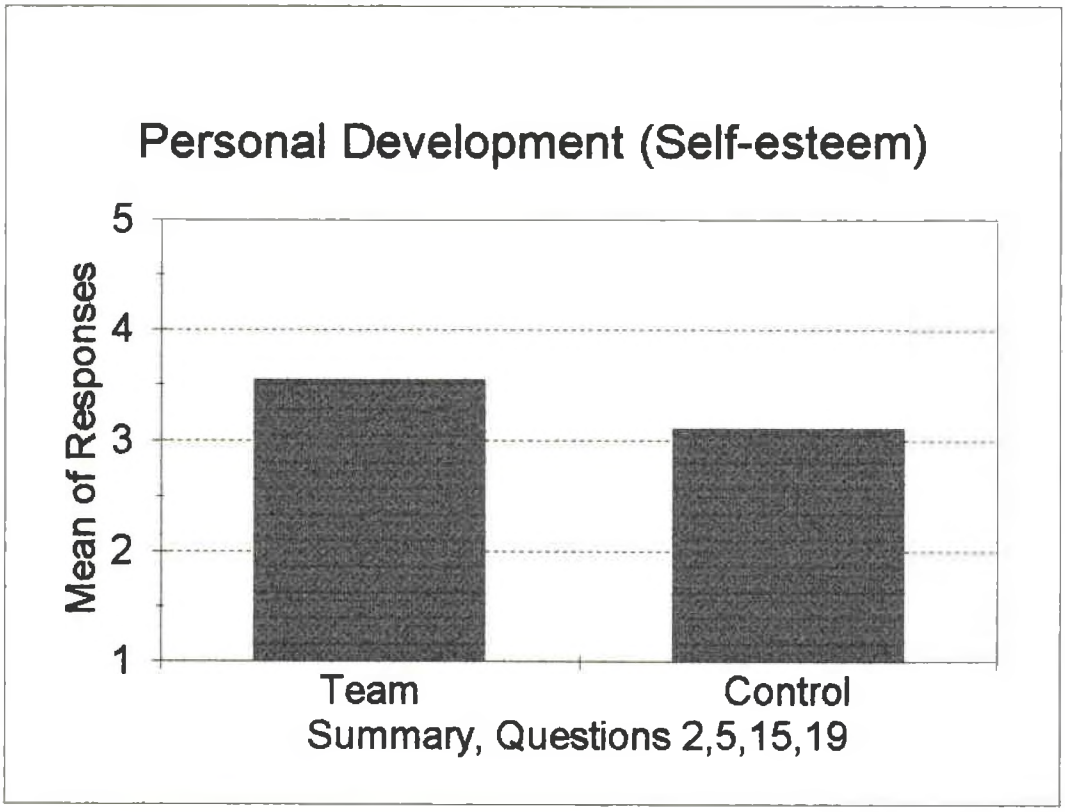
Personal Development (Self-esteem)
Mean of Responses
5
4
3
2
1
Team
Control
Summary, Questions 2,5,15,19

Figure 9

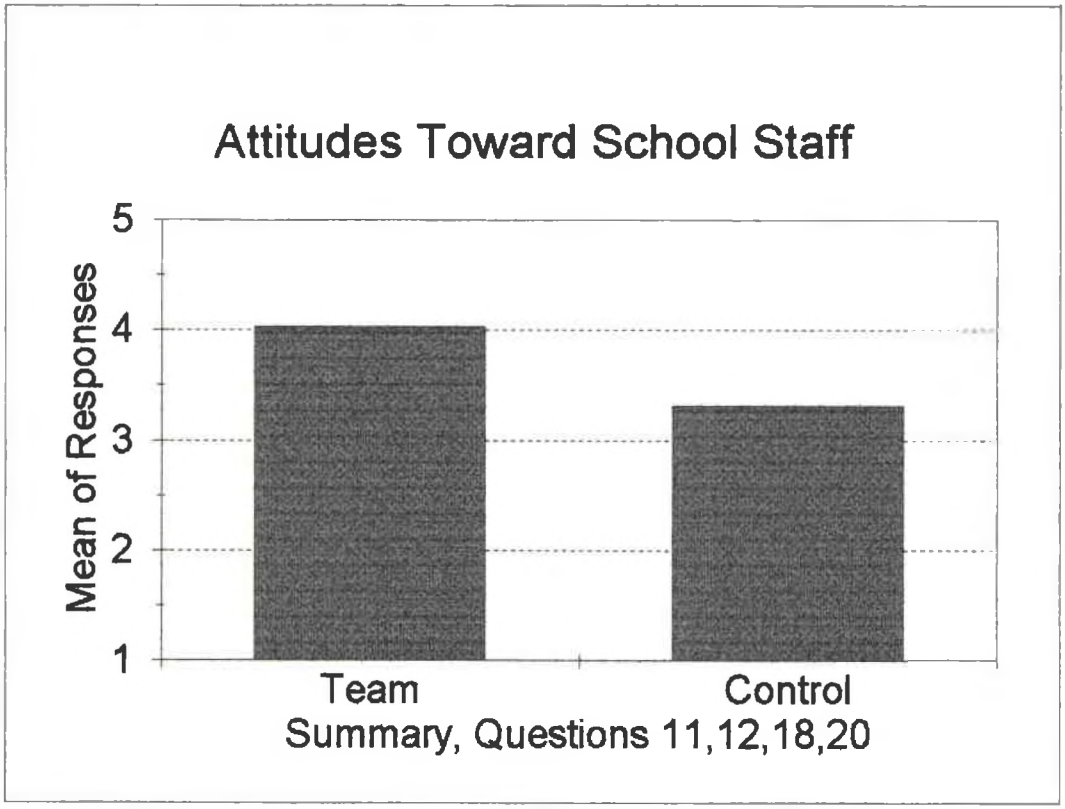
Attitudes Toward School Staff
Mean of Responses
5
4
3
2
1
Team
Control
Summary, Questions 11,12,18,20

Figure 10

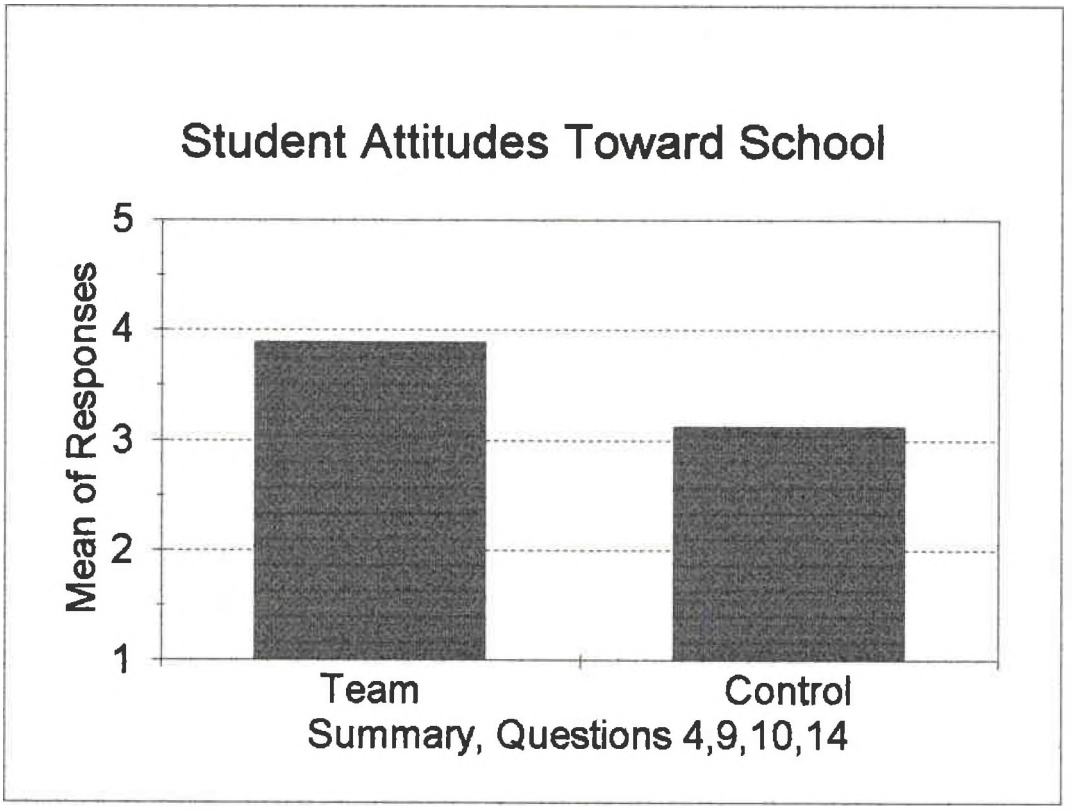
Student Attitudes Toward School
Mean of Responses
5
4
3
2
1
Team
Control
Summary, Questions 4,9,10,14

Figure 11

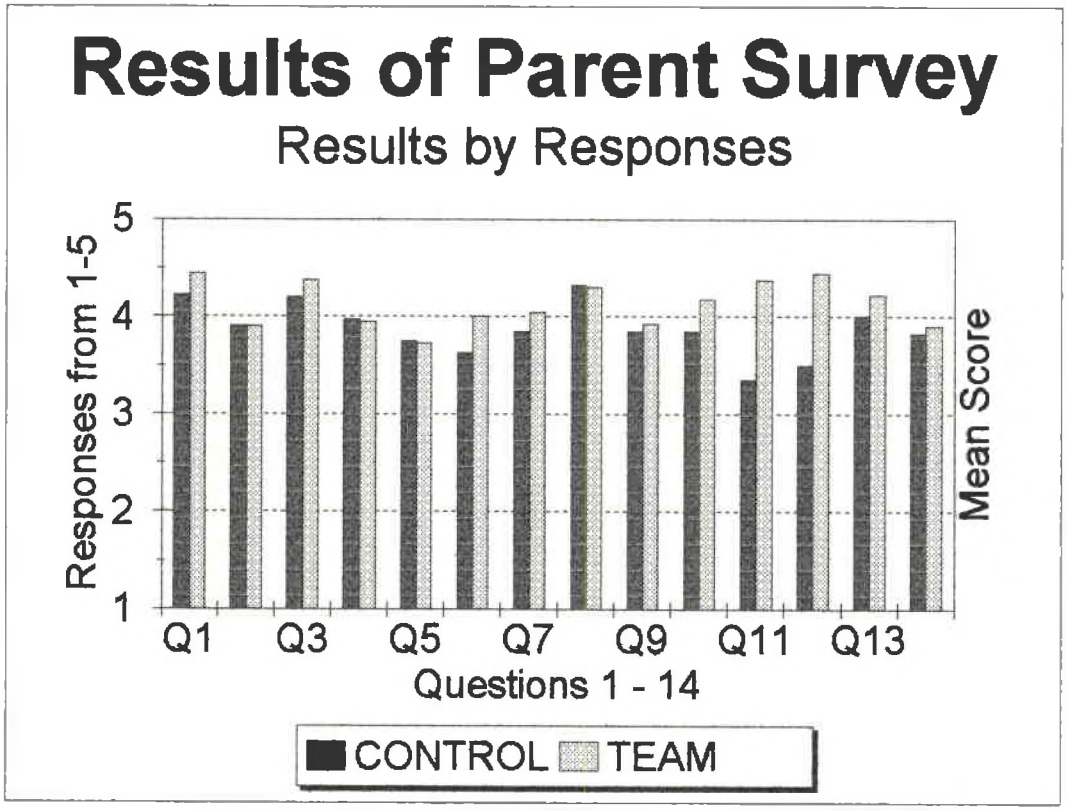
Results of Parent Survey
Results by Responses
Responses from 1-5
5
4
3
2
1
Mean Score
Q1
Q3
Q5
Q7
Q9
Q11
Q13
Questions 1 - 14
CONTROL
TEAM

Figure 12

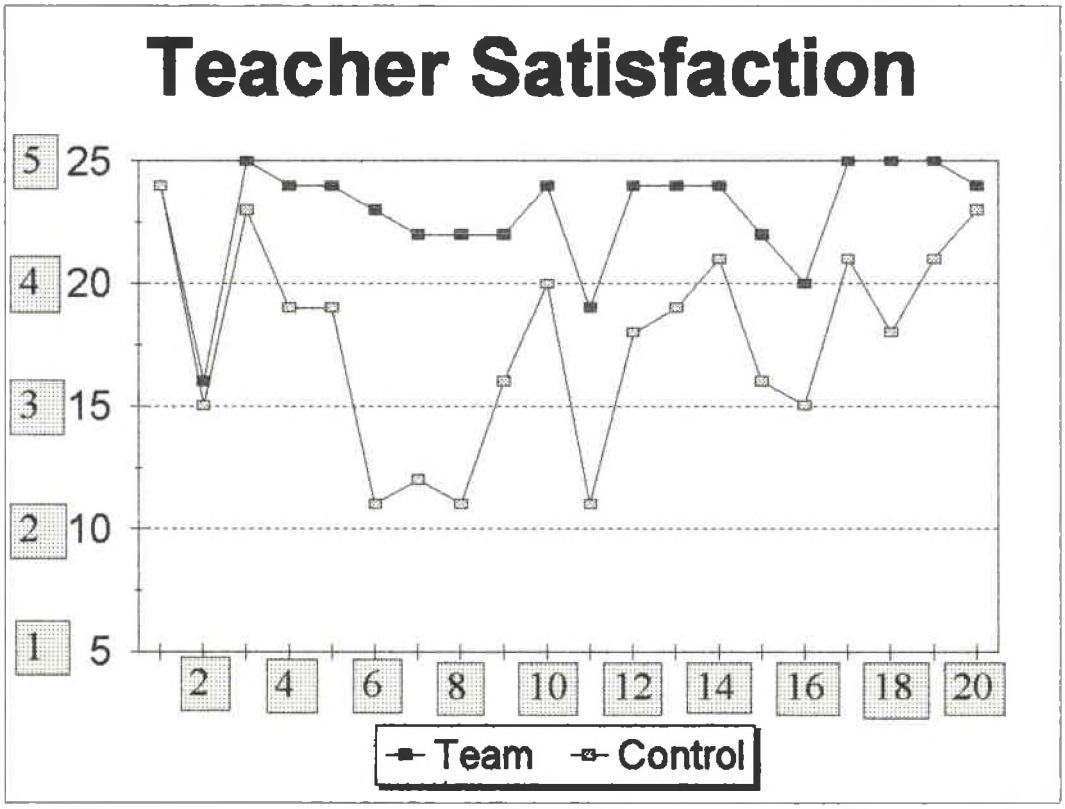
Teacher Satisfaction
5 25
4 20
3 15
2 10
1 5
2
4
6
8
10
12
14
16
18
20
Team
Control

Figure 13

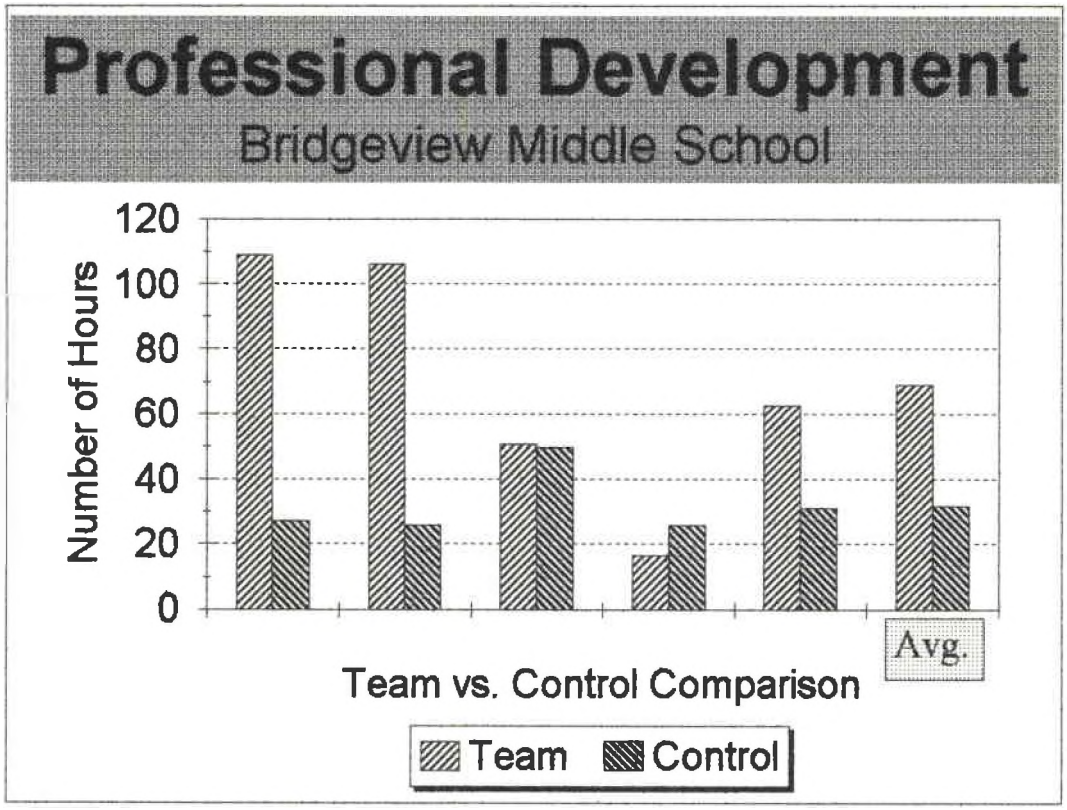
Professional Development
Bridgeview Middle School
Number of Hours
120
100
80
60
40
20
0
Avg.
Team vs. Control Comparison
Team
Control

Figure 14

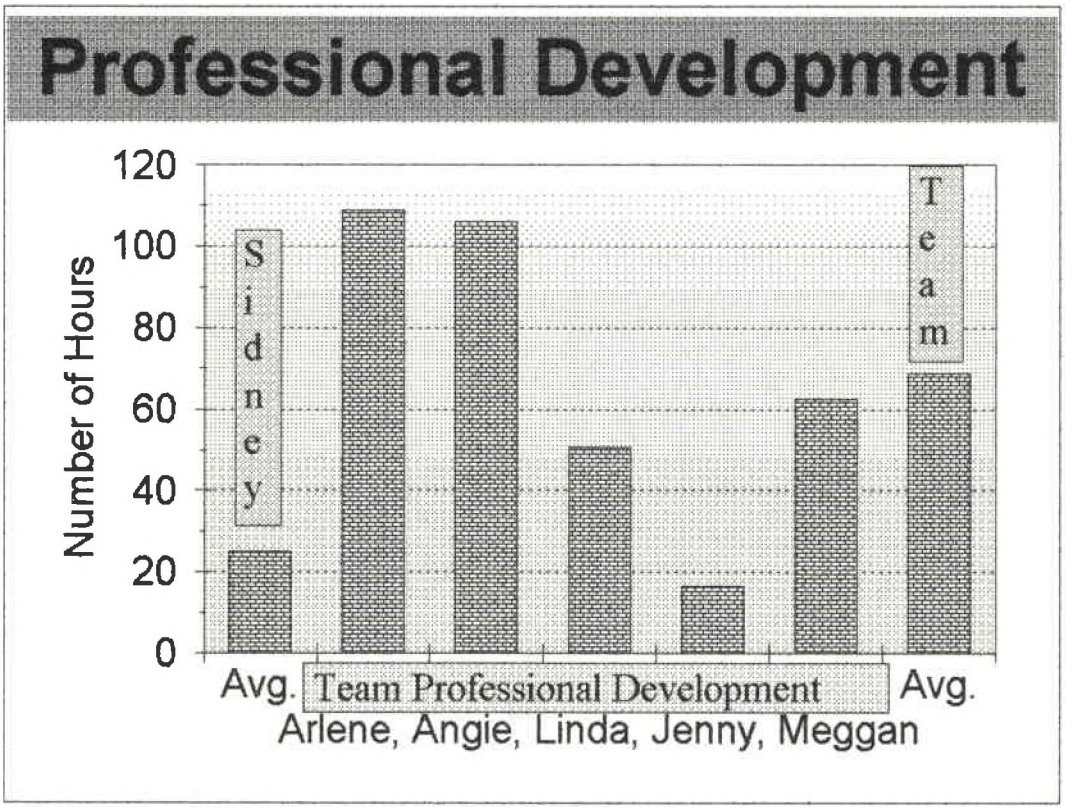
Professional Development
Number of Hours
120
100
80
60
40
20
0
Sidney
Team
Avg.
Team Professional Development
Avg.
Arlene, Angie, Linda, Jenny, Meggan

Figure 15

APPENDIX B

STUDENT SURVEY COMMENTS

Seventh Grade Nonteamed Students

Only people who are popular get opportunities.

Bridgeview is not a fun school.

I think that the school should teach line dancing if the students want to take it. Also our school should have t-shirts and sweat shirts on sale to show school spirit. Also the student council needs to be better and it shouldn't be all the rich kids who get student council. It should be for people who want to make Bridgeview a better school and make it safer.

Eighth graders push seventh graders around.

Bridgeview is a good school to go to.

I think that it would be nice if the demerit thing was not so bad because getting demerits for chewing gum is stupid. Also, I think that going to school at 7:30 is a little too early for kids.

I think that when you are in gym class the coach shouldn't make you run before you have to finish running your mile.

It is so boring. If you all want us to learn, you don't just read out of a book, you do "hands on things" and spend a little time. But I like coming here.

Bridgeview is a very cool school but I think a few things need to be changed.

It's a good school but....the kids that go here isn't (sic).

I think that school is borring (sic). They should try to make it more interesting. Like just yesterday a girl fell asleep in class.

I think the teachers should pay closer attention to the students so they can get involved in our lives and help us with our problems and know when and where a fight is gonna be so they can prevent it.

Seventh Grade Team Students

Bridgeview is a safe, fun school with cute guys. I like it here. We need more dances! They are fun!

Bridgeview is very nice, but it could improve.

Bridgeview is okay, but I don't like it,

Teachers don't listen to all stories. Some people get in trouble for stuff they don't do.

Some kids in the hallway push their way through. So you can get hurt easily between classes. I wish that would stop. I have gotten scraps (sic) and cuts from that.

Our dances are great, we need more, if you take a

vote on it out of the school, most kids will vote "yes".

I don't like how some teachers go off the subject when you need to learn something.

More dances! More field trips!

There isn't much of anything at Bridgeview for but what little bit I learn.

I like it here a lot.

Most of the teachers teach fine but not all of them. I like teachers that help me understand better.

Sometimes it could go either way.

Bridgeview is a lot better than people say it is. Sure, we've got our share of wacky people, but all in all we're a good school.

Some students behave well others don't. they should also sell french fries and tater tots in the junk food line. Dances are boring!

We need to be more independant! New teachers

PARENT SURVEY COMMENTS

Seventh Grade Nonteamed

Teachers work excellently together.

These questions are tough to answer unless you're in the school building every day for every class.

Good job, Mrs. Gates.

I'm not familiar with the new team organization concept.

Believe the principal and vice principal do try to stay on top of things.

Is the science olympiad coach paid? The ones at Ft. Loramie get paid as an extra-curricular activity. They had many meetings. The students were coached quite well, which showed at the competition. They placed at least 4th. or 5th. in all categories and made 3rd. place overall. My son didn't seem to have much coaching. He was left to work on his own. I understand if the coach didn't get paid. If the coach was paid, he should have provided more assistance.

The actual quality of the school far exceeds the old reputation. This is a very good school.

Don't know anything about it. (Referring to the team.)

You need an elevator for (1) handicapped children who want to come to Bridgeview and (2) for children who get leg and/or foot injuries and can't come to school because of classes on the 2nd. or 3rd. floor!

We need a Jr. High softball program.

Seventh Grade Team

I'm very pleased with his grades and I think being in the T.E.A.M. classes has a lot to do with his good grades.

The program seems to be good for "T."

It is very enjoyable and exciting to hear about how well "A." is doing.

I think that it was a good idea that the students introduced us and then gave the conference themselves.

I thought it was nice that S. was able to present his work at the conference. It is the first time I ever experienced conferences done in this manner. Not only did it give his work a personal touch, but allowed him to express social skills valuable in building confidence in himself and his work.

We appreciated the conference. We were interested in what H. was doing. We hope she reaches the goals that she has set.

I feel my daughter is doing an excellent job this year and enjoying Bridgeview.

I think the team program is good, her (sic) grades have really improved since last year.

L. did a wonderful job conducting the conference. She was honest about weaknesses as well as strengths. She could explain why she received all her grades.

Thank you, Mrs. VanMatre and all TEAM teachers for a great effort with "J."!

I have seen a big improvement in "T."'s attitude toward the T.E.A.M.

R. seems to be interested in what she is doing and how well it is going. I hope she continues in school like she is doing now.

Keep up the great work!

You teachers do a great job with kids. Your effort putting this T.E.A.M. together is excellent.

I like your idea of the conference with the student. I was pleasantly surprised that you feel B. is ready for algebra.

I enjoy hearing K. tell about her work - especially as she decides how she can improve in certain areas.

I felt the conference updated me very well on what my child has been doing. I like that the child presented the conference to me. I also like the Student Progress Reports. It lets you know exactly where your child's grade came from.

I feel the T.E.A.M. has helped "S". She appears to be understanding her work better. I like the conferences. It gives the child and parent a chance to ask questions or have comments to the teacher.

My wife and I really like the T.E.A.M. way of teaching, it has really helped H. a lot.

First of all, I would like to thank you for your wonderful efforts, creativity, energy, and caring. You are doing a terrific job for our children!

Excellent conference. Very thorough. Covered each class completely. Enjoyed having conference with student.

APPENDIX C

STUDENT SURVEY

Fill in the blanks according to the following scale:

5 - strongly agree 4 - agree

3 - neither agree nor disagree 2 - disagree

1 - strongly disagree

___1. I am happy with the academic opportunities Bridgeview is providing for me.

___2. I am happy with the social opportunities Bridgeview is providing for me. (dances, clubs, etc.)

___3. I am happy with the enrichment opportunities Bridgeview is providing for me. (music, art, athletics, etc.)

___4. I like Bridgeview.

___5. There are times during the school day when I can release some of my energy.

___6. Students behave well in class.

___7. Students behave well outside of class.

___8. I feel safe at Bridgeview.

___9. I enjoy going to Bridgeview.

___10. I feel that I belong at Bridgeview.

___11. Adults at my school listen to each other.

___12. The teachers work well together at Bridgeview.

___13. Student behavior outside of class is appropriate.

___14. The number of classes I attend each day is just about right.

___15. I feel that I have input about what happens to me at school.

___16. I like the way my teachers teach me.

___17. I like the subjects I am taking.

___18. I feel that adults at Bridgeview listen to what I have to say.

___19. Students at Bridgeview feel good about themselves.

___20. Adults at my school feel good about themselves.

Comments:

PARENT SURVEY

Use the scale below to indicate how much you agree or disagree with the statements.

5 - strongly agree

4 - agree

3 - neither agree or disagree

2 - disagree

1 - strongly disagree

Please leave an answer space blank if you do not know enough about the statement made.

___ 1. I am pleased with the academic opportunities Bridgeview is providing for my child.

___ 2. I am pleased with the social opportunities Bridgeview is providing for my child. (dances, clubs etc.)

___ 3. I am pleased with the enrichment opportunities Bridgeview is providing for my child. (music, art, athletics, etc.)

___ 4. There seems to be good discipline within classes.

___ 5. There seems to be good discipline on school grounds.

___ 6. Bridgeview provides a safe environment for my child.

___ 7. I feel good about having my child attend Bridgeview.

___ 8. I feel welcome at Bridgeview.

___ 9. When a situation presents itself, I feel that people at Bridgeview listen to me.

___10. Teachers work well together at Bridgeview.

___11. I like the new team organization at Bridgeview.

___12. I feel that the new team organization at Bridgeview is good for students.

___13. I feel good about the quality of teaching at Bridgeview.

___14. I feel that I have input into what happens to my child at Bridgeview.

15. Circle the grade level of your child.

7 8

16. Are your child's classes with the seventh grade team teachers this year?

Yes No

COMMENTS:

TEACHER SURVEY

Grade level taught 1993-94_____

1993-94 Team (yes)_____ (no)_____

Fill in the blanks according to the following scale:

5 - strongly agree 4 - agree 3 - neither agree or disagree 2 - disagree 1 - strongly disagree

____1. I enjoy teaching at Bridgeview.

____2. I feel I have input regarding critical decision made at Bridgeview.

____3. I feel good about the subject(s) I teach.

____4. There is a high level of support from other teachers.

____5. There are adequate opportunities for my professional growth.

____6. There is adequate flexibility in the amount of class time I have to work with students.

____7. There is enough freedom in changing student schedules when I feel it is necessary.

____8. I am satisfied with the amount of parent contact I have.

____9. I am pleased with the level of student achievement in my class.

____10. Class discipline is satisfactory.

____11. Discipline on school grounds is satisfactory.

____12. I am pleased with the academic opportunities offered to students at Bridgeview.

____13. I am pleased with the enrichment opportunities offered to students at Bridgeview.

____14. I am pleased with the extracurricular activities offered to students at Bridgeview.

____15. Teachers work well together at Bridgeview.

____16. The atmosphere at Bridgeview is positive.

____17. The team organization at Bridgeview is helpful to students.

____18. The team organization at Bridgeview is helpful to teachers.

____19. I support the middle school philosophy and programs.

____20. If given the choice, I would choose to work in a school with a junior high philosophy and programs.

Comments:

Interdisciplinary Team Teacher Survey

1. Did you have a separate conference period and team planning period? Yes No

2. Did you have one period for both team and individual planning? Yes No

3. How many minutes per day were allotted for team planning excluding lunch?

a. 20-25 b. 25-30 c. 30-35 d. 35-40 e. 40-45

4. How many minutes per week would you estimate you worked on team planning during the planning period?

a. 45 b. 90 c. 135 d. 180 e. 225

5. How many minutes per week would you estimate you worked on individual lessons, tests, and grading during the planning period?

a. 45 b. 90 c. 135 d. 180 e. 225

6. Please rank in order which of these team activities received the most planning time once the school year started. [Use 1 for the most time, 2 for the second, etc.].

___Deciding on common themes and related topics for instruction.

___Discussing the problems of specific students and arranging help.

___Meeting as a team with parents to solve problems.

___Meeting as a team to arrange field trips and other activities.

___Meeting as a team to regroup students (in order to better match lessons to abilities).

___Meeting as a team to revise schedules (to allow for activities that need more time).

Other comments:

7. If you had more planning time, rank in priority order which of these would receive more time. [one (1) is the highest priority]

___Coordinating content

___Diagnosing individual student needs

___Planning special events

___Conducting parent conferences

___Regrouping

___Rescheduling

Other comments:

8. Please rank in order the benefits you feel you received from being a member of this team [One (1) in the highest priority]

___Social support and understanding from other team members

___Instruction was more effective because of increased integration and coordination across subjects and courses.

___Students problems were recognized quickly and solved effectively.

___Sharing of ideas, different perspectives of colleagues, etc.

___Students identified with the team and developed team spirit.

___Students improved both their work and attitudes.

Other benefits:

9. Please rank in order the problems you experienced from being a member of this team [One (1) is the most serious problem].

___Not enough planning time

___Insufficient training in the team approach

___School schedule prevented flexibility in varying time for different subjects

___Personality clashes with other team members

___Administrative constraints

___Lack of support from non-team teachers

Other problems:

References

Alexander, W. M. (1968). *The emergent middle school. New York: Holt, Rinehart & Winston.*

Alexander, W. M. (1968). The middle school Movement. *Theory Into Practice, 7*(3), 114-117.

Alexander, W. M. (1978). How fares the middle school. movement? *Middle School Journal, 9*(3), 1-21.

Alexander, W. M. (1988). Schools in the middle: Rhetoric and reality. *Social Education, 52*(2), 107-109.

Arhar, J. (Ed.)(1992). Interdisciplinary team organization. *Research in Middle Level Education, 15*(2), Columbus, OH: National Middle School Association.

Arhar, J. M., Johnston, J. H., & Markle, G. C. (1989). The effects of teaming on students. *Middle School Journal, 20*(1), 25-27.

Arnold, J. (1982). Rhetoric and reform in middle schools. *Phi Delta Kappan, 63*(7), 453-456.

Best, J. W. and Kahn, J. V. (1993). *Research in education* (7th ed.). Needham Heights, MA: Allyn and Bacon.

Borg, W. R. (1987). *Applying educational research: A practical guide for teachers* (2nd ed.). White Plains, NY: Longman Inc.

Borland (1993). *Borland quattro pro for windows, version 5.0*. Scotts Valley, CA: Borland International Inc.

Brimm, R. P. (1969). Middle school or junior high? *National Association of Secondary School Principals, 53*, 1-7.

Brooks, K. (1978). The middle schools: A national survey, Part I: Establishment and administration. *Middle School Journal, 9*(2), 1-8.

Capelluti, J. (1991). Organizing middle level schools to meet the needs of students and staff. *Middle level education : Programs, policies and practices.* Reston, VA.: National Association of Secondary School Principals.

Carnegie Task Force on Education of Young Adolescents. (1989). *Turning Points: Preparing American Youth for the 21st Century.* Washington, DC: Carnegie Council on Adolescent Development.

Clark, S. N. & Clark, D. C. (1993). Middle level school reform: The rhetoric and the reality. *The Elementary School Journal, 93*(5), 447-458.

Cuff, W. A. (1967). Middle schools on the march. *NASSP Bulletin, 51*, 82-86.

Davis, C. O. (1924). *Junior high school education.* Yonkers-on-Hudson, NY: World Book.

Dettre, J. R. (1973). The middle school: A separate and equal entity. *Clearing House, 48*, 19-23.

Eichhorn, D. H. (1991). Why middle schools? *Middle level education: Programs, policies, and practices.* Reston, VA.: National Association of Secondary School Principals.

Epstein, J. L. (1990). What matters in the middle grades - Grade span or practices? *Phi Delta Kappan, 63*(7), 453-456.

Epstein, J. L. & Mac Iver, D. J. (1990). *Education in the middle grades: National practices and trends.* Columbus, OH: National Middle School Association.

Gatewood, T. E., Cline, G., Green, G., & Harris, S. E. (1992). Middle school interdisciplinary team organization and its relation to stress. *Research on Middle Level Education,* Columbus, OH: National Middle Schools Association.

George, P. S. & Alexander, W. M. (1993). *The exemplary middle school.* Ft. Worth, TX: Harcourt Brace.

George, P. S. & Oldaker, L. L. (1985). *Evidence for the middle school.* Columbus, OH: National Middle School Association.

George, P. S. & Oldaker, L. L. (1986). A national survey of middle school effectiveness. *Educational Leadership, 43*(4), 79-85.

Governor's Office, State of Ohio. (1994). *Ohio 2000/ Ohio first: A practical vision for Ohio's future.* (Available from Governor's Office).

Inglis, A. (1918). *Principles of secondary education.* New York: Houghton Mifflin.

Jackson, A. (1990). From knowledge to practice: Implementing the recommendations of Turning Points. *Middle School Journal, 21*(3), 1-3.

Koos, L.V. (1927). *The junior high school.* Boston, MA.; Ginn & Co.

Lentz, D.W. (1956). History and development of the junior high school. *Teachers College Record 57*(8), 522-530.

Lounsbury, J. H. (1990). Interdisciplinary teaming - Destination or way station? *Middle School Journal, 21*(4), 41.

Lounsbury, J. H. & Clark, D. C. (1990). *Inside grade eight: From apathy to excitement.* Reston, VA: National Association of Secondary School Principals.

Mac Iver, D. J. (1990). Meeting the needs of young adolescents: Advisory groups, interdisciplinary teaching teams, and school transition groups. *Phi Delta Kappan, 71*(6), 458-464.

Mac Iver, D.J. & Epstein, J.L. (1993). Middle grades research: Not yet mature, but no longer a child. *Elementary School Journal, 93*(5), 519-533.

Mills, R. A., Powell, R. R. & Pollak, J. P. (1992). The influence of middle level interdisciplinary teaming of teacher isolation: A case study. *Research on Middle Level Education,* Columbus, OH: National Middle School Association.

Moss, T. C. (1969). Middle school comes and takes another grade or two. *National Elementary Principal, 48*(4), 37-41.

National Middle Schools Association. (1992). *Research in Middle Level Education.* Columbus, OH., Author.

Popper, S. H. (1967). *The american middle school: An organizational analysis.* Waltham, MA.: Blaidsdell Publishing.

Schlechty, P. (1994, March). [Speech to the Shelby County Business Advisory Council].

Schurr, S. L. (1992). *How to evaluate your middle school: A practitioners guide for an informal evaluation program.* Columbus, OH: National Middle School Association.

Slavin, R. E. (1990). Achievements effects of ability grouping in secondary schools: A best evidence synthesis. *Review of Educational Research, 60,* 471-500.

Spear, R. C. (1992). Middle level team scheduling: Appropriate grouping for adolescents. *Schools in the Middle, 2*(1), 30-34.

Stewart, W. J. (1975). What causes a middle school to be ineffective: Student-centered teacher approach. *Clearing House, 49*(1), 23-25.

U.S. Department of Education (1990). *America 2000: An educational strategy.* Washington, DC: U.S. Government Printing Office.

Van Denberg, J.K. (1922). *The junior high school idea.* New York: Henry Holt and Company.

Van Til, W., Vars, G. F. & Lounsbury, J. H. (1967). *Modern education for the junior high school years.* (2nd ed.) Indianapolis, IN.: Bobbs-Merrill.

Walsh, K. J. & Shay, M. J. (1993). In support of interdisciplinary teaming: The climate factor. *Middle School Journal, 24*(4), 56-60.