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**THE EFFECTS OF INTERDISCIPLINARY TEAM SIZE ON STUDENT
ACHIEVEMENT, BEHAVIOR, ATTENDANCE, AND STUDENT PERCEPTIONS
ABOUT COMMUNITY**

By

James V. Sutfin

A DISSERTATION

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Doctor of Education

Major: Educational Administration

Under the Supervision of Dr. Martha Bruckner

Omaha, Nebraska

August, 2002

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DISSERTATION TITLE

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BY

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**THE EFFECTS OF INTERDISCIPLINARY TEAM SIZE ON STUDENT
ACHIEVEMENT, BEHAVIOR, ATTENDANCE, AND STUDENT
PERCEPTIONS ABOUT COMMUNITY**

James V. Sutfin, Ed.D.

University of Nebraska, 2002

Advisor: Dr. Martha Bruckner

This study explored the impact of interdisciplinary team size on student achievement, behavior, attendance, and perceptions about community in an affluent Midwestern suburban middle school. Interdisciplinary teams were divided up in to three-, four- and five-teacher configurations. Data were gathered through the use of the district's School Information and Management System (SIMS) as well as the School Ethical Climate Index (SECI) (Schulte et al., 2002). The dependent variables were (a) academic achievement, (b) student behavior, (c) student attendance, and (d) student perceptions about community. Independent variables were the interdisciplinary team and grade level. All four research questions were answered using the two-way analysis of variance conducted at the .01 level to control for Type I errors. A total of 210 out of 213 students (98.6%) participated in the study.

Results of the study did not support the idea that team size affected student achievement, behavior, attendance or perceptions about community. Results of the two-way ANOVA indicated that there was a significant grade level main effect for grade point average and behavior referrals ($F(1, 207) = 12.82, p < .0005$; $F(1, 207) =$

8.65, $p=.004$, respectively). Grade point averages significantly decreased for the three-teacher and five-teacher team ($F(1, 210) = 8.62, p = .004$; $F(1, 210) = 33.43, p<.0005$, respectively) from sixth to seventh grade. Referrals were significantly lower in sixth grade than in seventh grade across all three teams. These findings could not be linked to team size, however. Additional findings indicated that students with a grade point average of less than 2.50 had a statistically different perception about community for the *student to student* subscale ($p=.007$).

As a result of this study, schools with middle grade students are recommended to continue studying team size and its affect on achievement, behavior, attendance, and community. Practitioners are also recommended to study and implement programs that help students with a grade point average of less than 2.50 develop a sense of community.

**This Dissertation is dedicated to Julie, Brady, and Tessa.
I love our family and life together!**

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Chapter 1

Introduction

Middle-level education has been one of the most talked about curriculum reform efforts in recent years. This reform actually began over a century ago at a time when America began moving from an agrarian-based society to an industrialized world power (George, Stevenson, Thomason, & Beane, 1992). Cities continued to grow and the need for different types of schools became very evident. For many years urban school districts worked with grade arrangements of 6-6 and 6-3-3. By 1960, 6 years of elementary, 3 years of junior high and 3 years of high school became the status quo (Allen, 1980; Cawelti, 1988). The junior high was specifically built around helping young adolescents develop into adults while also providing them with the final leg of general education (Lounsbury, 1996; Tye, 1985). The problem with the junior high system was that it did not meet the needs of the young adolescents (Alexander, 1995; Mac Iver, 1989; McKay, 1995). Educators across America began to look at a different approach, a middle-level approach that was specifically designed for young developing adolescents.

Purpose of the Study

The number of middle-level schools has grown since the beginning of the century. Today, middle-level schools are widely accepted across America, but not without problems. According to Bradley and Manzo (2000), "The middle grades are feeling the squeeze" (p. 1). The lack of measurable academic success in middle schools has led to a feeling of failure among certain groups. William Schmidt, a research coordinator for the 1996 TIMMS report, believes that in mathematics and

science, the middle grades are an intellectual wasteland (Bradley & Manzo, 2000). It is important that educators examine the success of their middle schools so that students not only receive the best possible education, but so that students also have a chance to transition into adulthood. The purpose of this quantitative study was to analyze how the size of the interdisciplinary team affects student achievement, behavior, attendance, and perceptions about community in a Midwestern suburban middle school. It was important to examine these results because different sizes of teams may require different sorts of assistance. With the impending teacher shortage, schools need to be especially concerned with the best ways to staff buildings so that students experience the best possible opportunities to develop physically, socially, emotionally, and academically.

Research Questions

The following questions were addressed and answered as part of this study on middle-level student achievement, behavior, attendance, and perceptions about community.

1. Was there a significant difference in academic achievement among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by grade point average when compared to data gathered in the sixth grade?
2. Was there a significant difference in rates of referral among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by office referral counts when compared to data gathered in the sixth grade?

3. Was there a significant difference in rates of attendance among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by office attendance records when compared to data gathered in the sixth grade?
4. Was there a significant difference in perceptions about community among seventh grade students participating in three-member, four-member, or five-member interdisciplinary team as measured by the School Ethical Climate Index (Schulte et al., 2002) when compared to data gathered in the sixth grade?

Theoretical Perspective

The theoretical perspective for this study was rooted in the middle-level philosophy. Middle-level theorists believe that young adolescents undergo more profound physical and emotional changes than at any other time of their lives (NMSA, 1995). Because of these complex mental, physical, and emotional changes, educational programs are tailored to fit the developmental level of these young adolescents (Beane, 1990; Lewis, 1992; Lounsbury & Vars, 1978; National Middle School Association, 1995; Vanhose & Strahan, 1988). According to Gottlieb (1957) middle-level children are neither children nor adults.

The adolescent has one foot in childhood and one in adulthood. He does not know which he prefers. The world of play and fantasy is behind him. The world of reality and responsibility lies ahead. He is faced with situations that are new and strange, that frighten and entice him. He wants to leave his

familiar world and yet he is loath to go. He wants to enter the strange unexplored country that lies ahead and yet he is afraid. (p.18)

Developing adolescents will go through a multitude of physical changes that have an impact on their ability to learn (Eichhorn, 1987; Vanhooose & Strahan, 1988). The changes can be strong enough that students can and will tune out any attempt to teach them (Vanhooose & Strahan, 1988). It is essential that middle schools develop curriculum services around what is known about adolescent development rather than around subject matter (NMSA, 1995).

Adolescents, who are working their way through puberty, will at times be able to think in the abstract and at other times they will not. Adolescents may not be able to think abstractly across all subject areas nor consistently from task to task (Keating, 1988; Smart & Smart, 1973). During the school day, adolescents continue to shift back and forth between abstract and concrete thinking. The teacher has to be able to quickly identify where each student is so that services can be provided at a level that students will understand. The classroom is made up of students at all different levels of development (Vanhooose & Strahan, 1988).

Middle-level programs are aimed directly at providing an education that is built upon the specific needs of young adolescents (Beane, 1990; Lewis 1992). In 1989, the Carnegie Council on Adolescent Development recommended that middle-level practitioners adopt the following parameters in an effort to guide middle-level development as well as need responsive programs for adolescents:

1. "Create small communities for learning" (p. 10).
2. "Teach a core academic program" (p. 12).

3. **“Ensure success for all students” (p. 14).**
4. **“Empower teachers and administrators to make decisions about the experiences of middle grade students” (p. 16).**
5. **“Staff middle grades schools with teachers who are expert at teaching young adolescents” (p. 19).**
6. **“Improve academic performance through fostering the health and fitness of young adolescents” (p. 20).**
7. **“Reengage families in the education of young adolescents” (p. 22).**
8. **“Connect schools with communities” (p. 23).**

In 2000, the Carnegie Corporation of New York reiterated their founding principles of middle level education and added the following new recommendations to improve middle level practices:

1. **“Teach a curriculum grounded in rigorous, public academic standards for what students should know and be able to do, relevant to the concerns of adolescents and based on how students learn best” (p. 23).**
2. **“Use instructional methods designed to prepare all students to achieve higher standards and become lifelong learners” (p. 23).**
3. **“Staff middle grade schools with teachers who are expert at teaching young adolescents and engage teachers in ongoing, targeted professional development opportunities” (p. 23).**
4. **“Organize relationships for learning to create a climate of intellectual development and a caring community of shared educational purpose” (p. 24).**

5. **“Govern democratically, through direct or representative participation by all school staff members, the adults who know the students best” (p. 24).**
6. **“Provide a safe and healthy school environment as part of improving academic performance and developing caring and ethical citizens” (p. 24).**
7. **“Involve parents and communities in supporting student learning and healthy development” (p. 24).**

In order for middle-level schools to be successful, they must be responsive to the diverse needs of young adolescents (NMSA, 1995). Being responsive to the needs of young adolescents means that educators are committed to young adolescents (NMSA, 1995). It also means that expectations are high, the climate is positive, the vision of the school is shared, a partnership exists between the school and the family, and there is an adult advocating for every child (NMSA, 1995).

The National Middle Schools Association (1995) believes that developmentally responsive middle schools exhibit the characteristics above, but that they also provide the following:

1. **curriculum that is challenging, integrative and exploratory,**
2. **varied teaching and learning approaches,**
3. **flexible organizational structures,**
4. **programs and policies that foster health, wellness, and safety and**
5. **comprehensive guidance and support services (p. 11).**

The characteristics of the middle school, as well as the services offered, help adolescents develop to their fullest potential academically, socially, emotionally, and physically.

Definition of Terms

- **Middle School:** A grade 6 through 8 school that uses interdisciplinary teaming and exploratory teaching while reaching out to meet the individual and diverse needs of students.
- **Adolescent:** Any student enrolled in the sixth through eighth grade program at the middle school.
- **Interdisciplinary Team:** An interdisciplinary team (also referred to as a team) is made up of two to five teachers teaching up to four curriculum areas: science, mathematics, social studies, and language arts (Carnegie Corporation of New York, 2000; Carnegie Council on Adolescent Development, 1989; Erb & Doda, 1989; NMSA, 1995). In this particular study teachers worked with four teamed curriculum areas: science, social studies, mathematics, and language arts.
- **Core subject:** Core subject areas are made up of mathematics, social studies, science, reading and language arts.
- **Exploratory:** Exploratory courses include inquiry or activity based classes such as industrial technology, music, physical education, art, and family and consumer science.
- **Academic Achievement:** Student academic achievement was measured by grade level cumulative grade point average. Grade point average was measured on a standard 4.0 scale. A grade of 1 earned 4 mark points, a grade of 2 earned 3 mark points, a grade of 3 earned 2 mark points, and a grade of 4 earned 1 mark point. Students do not receive any mark points for failing a course. There was no weighted grade point average for accelerated placement. All teachers were

required to use a 7-point grading scale. For example, a grade ranging from 93 to 100 was considered a 1. A grade ranging from 85 to 92 is considered a 2. Any grade at or below 68% was considered a 5.

- **Attendance:** Attendance was the number of days a student was gone from school during the entire year. A day was eight periods long. The hours of absence could have been either consecutive or non-consecutive. In other words, a student who missed first period eight times was charged with one day of absence. The same was true for a student who missed eight periods on one day.
- **Community:** The community of the team and school was defined by applying five ethical principles: respect for autonomy, nonmaleficence, beneficence, justice, and fidelity to the interactions and relationships between students and faculty (Schulte, Brown, & Wise, 1991). According to Schulte et al. (2002), “Respect for autonomy refers to allowing a person to act independently; nonmaleficence means doing no harm to others; beneficence refers to benefiting others; justice requires one to treat others fairly; and fidelity requires one to be faithful and trustworthy. At the core of these principles lies respect for persons” (p. 5).

Assumptions

Assumptions of the study included the following:

- Students answered the community survey honestly in both the sixth and seventh grade.
- The taught curriculum was the same for the 3, 4, and 5 person teams.
- Teachers on the 3, 4, and 5 person teams were competent and effective.
- Students on the smaller team spent more time in an individual teacher’s room.

- Students were randomly assigned to teams.

Limitations

Limitations of the study include the following:

- Parents were able to exclude their students from the study. This means that the sample of students does not include every student.
- Student mobility may have affected findings, as student relocation could not be controlled.
- Differences may have been attributed to causes other than team size.

Delimitations

This study was delimited to an affluent, high achieving suburban middle school with a grade 6 through 8 arrangement.

Significance of the Study

Studying the effects of team size on student achievement, attendance, behavior and sense of community added a new component to the middle-level research base. There was a great deal of research comparing the academic and affective factors of middle-level to junior high (Arhar, 1991; Bradley, 1988; Armstrong, 1977; Cotton, 1982; Cooper & Sterns, 1973; Gamsky, 1970; Hall, 1993; Sharts, 1988; Sinclair, 1980). There was little research on comparing the size of the team with affective and academic factors within the middle school (Hassler, 1994; Stevenson, 1996, Williams, 1999).

Studying the effects of teaming within the middle school was important because educators try to do what is best for students not only academically, but also socially and emotionally. If the size of team had an effect on students' perceptions

about community as well as academic success, then the school should offer a best-practice approach to teaming. Studying and improving the school community has grown in importance since shooting incidents like Padooka and Columbine. Educators around the country recognize how important a stable community is to school safety.

Economical considerations also need to be taken into account when studying team size. Large teams are more economically efficient than small teams because the demand for subject specific instructional supplies is less. Teachers on large teams can choose to teach only one subject, rather than two. This means that fewer rooms need to be equipped with special equipment and that instructional resource supplies can be limited to one teacher. If team size does not impact achievement or sense of community, then schools may respond to programmatic changes that echo sound fiscal decision-making.

Articles on America's teacher shortage can be found in newspapers across the country almost everyday. Teachers on small teams have to teach more than one subject area. This means that these teachers are either dual endorsed or are teaching out of their endorsed area. Finding teachers with the correct multiple endorsements is getting more difficult because the pool of teachers has dwindled. If there is no difference in achievement, attendance, behavior, or perception about community, then sound fiscal decision-making again becomes paramount.

Organization of the Study

Chapter 2 reviews the literature pertaining to (1) the history of middle-level, (2) philosophy of middle-level, and (3) the effects of teaming on affective and

academic achievement. Chapter 3 discusses the procedures utilized in gathering School Ethical Climate Index survey data as well as grade point averages, and attendance and referral rates. Chapter 4 presents the results of the study, while Chapter 5 discusses them.

Chapter 2

Review of the Literature

This review summarizes the historical background of education reform that moved ninth graders to the junior high and eventually back to the high school with the advent of middle-level education. The philosophy and beliefs of the middle school will be examined in detail as well as the middle-level structure compared to the junior high. The affective and academic effects of implementing different interdisciplinary teaming concepts into the middle school will also be reviewed.

History

The development of the middle school actually began about 130 years ago. The year was 1872 and Harvard University President Charles Eliot began to investigate ways to improve the educational program at both the elementary and secondary level so college students would be more successful. In 1892, a special task force headed by Eliot known as the Committee of Ten on Secondary Schools recommended starting secondary education 2 years earlier. Students would then receive 6 years of elementary and 6 years of secondary instruction (George et al., 1992). For years to come, school districts across the United States experimented with 6-6 and 6-3-3 arrangements of school buildings (Gruhn & Douglas, 1971). By 1960, 6 years of elementary, 3 years of junior high and 3 years of high school became the standard pattern of schooling (Allen, 1980; Cawelti, 1988).

Junior high school, even at its birth, had many of the qualities found in a middle school. In 1940, six functions for junior high were established: integration, exploration, guidance, differentiation, socialization, and articulation (Gruhn &

Douglas, 1956). Programs and concepts were to be based on the characteristics of young adolescents, and focused on learning skills (George, et al., 1992). The junior high would not only provide the final portion of general education and offer a transition to high school, but would do so through emphasizing child-centered instructional practices (Allen, 1980; Tye, 1985).

In 1959, the National Association of Secondary School Principals Committee on Junior High School Education endorsed a 7 through 9 grade school as the most appropriate because of the time of puberty onset (Committee on Junior High School, 1959). This committee again made a similar recommendation in 1967. In 1967, 3,368 schools with grade organizations of 6-7-8, 7-8 and 7-9 were surveyed. Eighty percent of the schools surveyed believed that the 7-8-9 arrangement was best for young adolescents (Gruhn, 1967). This belief, however, would not hold true.

In as early as 1960, pockets of educators began to promote a different grade arrangement. Adolescent research was beginning to indicate that children were maturing faster than in years past and that the ninth grade would be better suited in the high school (Lounsbury, 1996). The developmental differences between seventh, eighth and ninth graders had widened and junior high program effectiveness was questioned.

The context of American history is also partially to blame for the problems that junior high schools encountered. At the time junior highs emerged, America was establishing its prominence as a world power. Broudy and Palmer (1965) believed “The success routes of an era dictate the dominant patterns of schooling” (p. 159). Assembly lines and factories lined the cities. Success meant efficiency. School

administrators, practitioners and the like arranged junior highs in the most efficient manner – by content area (McKay, 1995; McNeil, 1986). Curriculum driven departmentalization became the focus, instead of students. The junior high, which originated to meet the specific needs of young adolescents, aligned itself with content knowledge and stream line efficiency. The need for a different type of education, a student centered education, was not filled.

Junior high educators tried to offer diverse programs to seventh, eighth and ninth graders in the same physical plant. Seventh and eighth graders did not have to earn Carnegie units (credits) while ninth graders did. Even the pursuit of Carnegie units echoed the philosophies of the Industrial Revolution. Once all of the Carnegie units were attained, the product was complete (Dickinson & Erb, 1997). High schools refused to surrender total control of the ninth grade; they simply allowed ninth graders to relocate (George, et al., 1992). Junior high schools became precisely those junior sized high schools (Howard & Stoumbus, 1970). Providing services for any grade level was not effective. By the end of the late fifties, the need for reexamining schooling of early adolescents became of paramount importance. It was believed that a grade 5 or 6 through 8 arrangement would better serve the needs of these young adolescents (Alexander & Kealy, 1969).

Steady declines in academic achievement were blamed on the mismatch between developmental needs of children and the educational environment (Alexander, 1995; Eichhorn, 1987; Mac Iver, 1989). The academic, social and emotional needs of young adolescents were too different from the needs of high school or elementary school programs (McKay, 1995). In short, although designed to

provide a different experience, too many junior high schools resembled high schools (Cuban, 1992). The answer to the problem was the adoption of the middle school philosophy and practice.

Middle school would be comprised of fifth or sixth through eighth grade rather than seventh through ninth grade (see Table 1). This arrangement would allow younger adolescents (sixth graders) to receive services that emulate the elementary school while older children (seventh and eighth) would receive services tailored to fit their immediate and future educational needs. Once in place, the middle school would be more flexible, less organized and less dependent on individual teacher expertise (Dickinson & Erb, 1997). This new 'children in the middle' arrangement grew by 200% between 1970 and 1990 (Alexander & McEwin, 1989). In contrast, the number of junior highs decreased by 53% (Alexander & McEwin, 1989). Today, there are an estimated 16,000 middle schools and 2,000 junior highs (Bradley & Manzo, 2000). This number of middle schools is up significantly from the 1997 totals of 10,205 middle schools (Reinhard, 1997).

Purpose of the Middle School

The purpose of the middle school is to provide a student-centered education for students between 10 and 15 years of age (Dickinson & Erb, 1997; National Middle School Association, 1982; National Middle School Association, 1995; Nebraska Department of Education, 1997). Middle school children cannot be viewed as elementary children, nor can they be viewed as secondary children. Middle school children are unique, and the middle school philosophy and practice work toward fulfilling the unique physical, emotional, social, and intellectual needs of these

Table 1

Comparing the Middle-Level School to Junior High School (Rottier, p.10)

Topic	Middle-Level School	Junior High School
Grade Structure	Usually 6-8	Usually 7-9
Ages	11 to 15 years old	12 to 16 years old
Group Students	Heterogeneous	Ability group based on achievement tests
School Subjects	Core subjects are taught by a team of teachers	Departmentalized by subject matter
Advising	Teachers in advisor/advisee relationship	Counselors assigned to students
Extracurricular Activities	Intramurals - all students have an opportunity to participate	Interscholastic athletics
Daily Schedule	Block of time for interdisciplinary study	6 or 7 periods of equal length each day
Teachers' schedule	Interdisciplinary teaming	Single assignments
Teachers' background	Core curriculum, student centered, advising responsibilities, team teaching, tendency towards elementary school	Subject orientation, tendency toward high school philosophy

young adolescents (Clark & Clark, 1993; National Middle School Association, 1995).

Young adolescents undergo tremendous changes in their physical development. Researchers argue over who has more physical changes, an infant or an adolescent child (Lewis, 1992; National Middle School Association, 1995; Nebraska Department of Education, 1997). Middle school campuses are a mixture of physically mature and immature children (Campbell, 1992). Some girls may be taller than boys, and some boys may look like 18 year-olds. The opposite is also true. Some boys and girls may look like they should attend the local elementary school. Clumsiness and awkwardness caused by growth spurts is the norm (Campbell, 1992; McKay, 1995). Body hair, voice changes, and growth spurts are physical signs of the hormonal growth that is occurring inside. The hormonal growth certainly has effects on the emotional development of these adolescents. Girls, on average, mature at a rate 2 years ahead of boys (Hough, 1995).

Middle-level children are emotionally fragile (Campbell, 1992; McKay, 1995; NMSA, 1995). They think that major events or disappointments can ruin their whole lives. In reality their life is back on track in a matter of hours or days. Middle-level children also lack the skills and ability to make consistent rational decisions. Middle-level children struggle with sex role identification as well as self-concept (Campbell, 1992; McKay, 1995). Innocent statements are often times turned into sexual innuendoes and self-concepts are shattered with only a couple of words (Campbell, 1992). Because these children do not mature at the same rate, they build each other up and tear each other down on a daily basis. Turmoil, both inward and outward, causes a lot of stress and strain on these children.

Adolescents continually compliment and criticize each other. This means that one-minute they are friends and the next minute they are enemies. Adolescents are driven by an incessant demand for social acceptance. Group membership is a strong social need and students spend a lot of time and energy seeking it out (Campbell, 1992; McKay, 1995; Nebraska Department of Education, 1997). The striving for social acceptance manifests itself out of peer pressure, which often times leads to the experimentation of drugs, alcohol and sex (Campbell, 1992; Lewis, 1992; McKay, 1995; Nebraska Department of Education, 1997). Social acceptance can also be seen through an adolescent's desire to act overly sophisticated or grown up. These descriptors further explain the conflict for students caught in the middle. Young adolescents find social satisfaction from their peers, but because of their age they need the support of their parents for major needs such as money, transportation, clothing, etc... (Nebraska Department of Education, 1997). Being seen with parents is embarrassing, but mom and dad have to drive because middle-level children cannot. Social acceptance of students forces adolescents to shun their parents, but the need for parents counteracts the shunning. Once again these students are caught in the middle.

Intellectual development of middle-level children falls into the same developmental pattern as physical, emotional, and social development. Intellectual skills range from concrete to abstract (Keating, 1988; Smart & Smart, 1973). No adolescent is in the exact same spot, and rapidity of change varies with each child. The classroom is made up of students from all different levels of development (Vanhoose & Strahan, 1988).

Middle schools serve the purpose to educate the children in the middle.

Educators take on the challenge of working with the multitude of physical, emotional, social, and intellectual levels. This is perhaps the most significant observation about middle school philosophy. The focus is not on the content, but rather on the child as an individual.

Philosophy of Middle School

The middle school philosophy is grounded in student centered education. In 1989, the Carnegie Council on Adolescent Development made the following recommendations to guide middle schools in their work for developing need responsive programs for adolescents:

- 1. “Create small communities for learning” (p. 10).**
- 2. “Teach a core academic program” (p. 12).**
- 3. “Ensure success for all students” (p. 14).**
- 4. “Empower teachers and administrators to make decisions about the experiences of middle grade students” (p. 16).**
- 5. “Staff middle grade schools with teachers who are expert at teaching young adolescents” (p. 19).**
- 6. “Improve academic performance through fostering the health and fitness of young adolescents” (p. 20).**
- 7. “Reengage families in the education of young adolescents” (p. 22).**
- 8. “Connect schools with communities” (p. 23).**

In 2000, the Carnegie Corporation of New York reiterated their founding principles of middle level education and added the following new recommendations to improve middle level practices:

1. “Teach a curriculum grounded in rigorous, public academic standards for what students should know and be able to do, relevant to the concerns of adolescents and based on how students learn best” (p. 23).
2. “Use instructional methods designed to prepare all students to achieve higher standards and become lifelong learners” (p. 23).
3. “Staff middle grades schools with teachers who are expert at teaching young adolescents and engage teachers in ongoing, targeted professional development opportunities” (p.23).
4. “Organize relationships for learning to create a climate of intellectual development and a caring community of shared educational purpose” (p. 24).
5. “Govern democratically, through direct or representative participation by all school staff members, the adults who know the students best” (p. 24).
6. “Provide a safe and healthy school environment as part of improving academic performance and developing caring and ethical citizens” (p. 24).
7. “Involve parents and communities in supporting student learning and healthy development” (p. 24).

In its position paper, the National Middle School Association (1995) identified that developmentally responsive middle-level schools are characterized by:

1. **educators committed to young adolescents.** Effective middle-level educators make a conscious choice to work with young adolescents and are an advocate for all.
2. **a shared vision.** Thirty years of research and practice provide middle-level educators with a solid foundation of belief.
3. **high expectations for all.** Developmentally responsive middle schools hold and act upon high expectations for all students, and the students themselves have expectations for success.
4. **an adult advocate for every student.** All adults in a developmentally responsive middle school advocate for young adolescents.
5. **family and community partnerships.** Families and community members are important stakeholders and the school recognizes and supports families and community members as participants.
6. **a positive school climate.** The developmentally responsive middle school is safe, inviting, and caring; it promotes a sense of community and encourages learning. (p. 11)

Because developmentally responsive middle schools believe in the above philosophy, their educators work at providing:

1. **a challenging integrative and exploratory curriculum.** This curriculum must recognize that some students will take longer to reach the desired

outcome while others will fulfill objectives easily and need new challenges (National Association of Secondary School, 1993).

2. **varied teaching approaches.** Teaching should bring in real world experiences, actively engage students in the learning process, emphasize collaboration, cooperation and community, and develop good people, caring for others' democratic values, and moral sensitivity (NMSA, 1995).
3. **assessment and evaluation that promotes learning.** Assessment and evaluation are essential to the ongoing learning process. Middle school students should set their own academic and behavioral goals and work at assessing their progress. Learning should be demonstrated through assessment strategies that make evaluative judgements as well as teach learning strategies (NMSA, 1995).
4. **programs that foster health, safety and wellness.** Students are provided with a multitude of opportunities to develop their minds and bodies. School wide emphasis is placed on health and wellness (NMSA, 1995).
5. **comprehensive guidance and support services.** Developmentally responsive middle schools provide teachers, counselors and other trained professionals that assist students. Advisory programs (homeroom) allow students to meet with the same teacher and group of students everyday. Programs are aimed at teaching cooperation, decision making, and goal setting (NMSA, 1995).
6. **flexible organizational structures.** Interdisciplinary team refers to grouping anywhere from 2 to 5 team members (teachers) instructing students in two,

three or four core subject areas. Teaming groups students and teachers together for a block of time (Merenbloom, 1988). The teaming provides the structural backbone that supports the development of the psychosocial environment (Keefe, Clark, Nickerson, & Valentine, 1983) as well as delivery of the curriculum that balances content and human factors (National Middle School Association, 1995).

These practices, supported by a well-grounded middle school philosophy, can aid students in their physical, emotional, social, and intellectual development. The structure of the day will offer the opportunity for program delivery as well as influence how well students develop.

Teaming Structure

The Carnegie Corporation (1990) in its national report charged middle schools with a tremendous responsibility when it wrote, "School should be a place where close, trusting relationships with adults and peers create a climate for students' personal growth and intellectual development" (p. 10). Middle schools should create schools-within-schools, small communities, or houses (Carnegie Corporation of New York, 2000; Carnegie Council On Adolescent Development, 1989; Erb & Doda, 1989). The organizational structure of these houses allows for the teaming of students and teachers. This team structure, school within a school, or house system has proven to change the climate of the school for students and teachers (Arhar, 1991; Alexander & McEwin, 1989; Carnegie Corporation of New York, 2000; Cotton, 1982; Epstein & Mac Iver, 1990; Jacob, 1994; National Association of Secondary School Principals, 1996; Powell, Farrar, & Cohen, 1985; Sullivan, 1996).

Interdisciplinary teaming is viewed as an essential component of effective middle-level education (Carnegie Corporation of New York, 2000; Carnegie Council On Adolescent Development, 1989; Cotton, 1982; Epstein & Mac Iver, 1990; Erb & Doda, 1989; George & Oldaker, 1985-1986; George & Stevenson, 1988; National Middle School Association, 1982, 1995). Research also indicates that implementation of interdisciplinary teaming is a recognized practice in addressing the needs of young adolescents (Carnegie Corporation of New York, 2000; Carnegie Council on Adolescent Development, 1989; Connors, 1996; Erb & Doda, 1989; Ferrara, 1993; George & Oldaker, 1985-1986; Jacob, 1994; Lipsitz, 1984; National Association of Secondary School Principals, 1996; National Middle School Association, 1982, 1995). Parents, students, and teachers all feel that an interdisciplinary team program is effective in meeting students' needs (Ferrara, 1993). According to Dickinson and Erb (1997) "What two (or three or four) people can do for 60 (or 90 or 100) students is so much more than those two can do working alone" (p. 55).

Interdisciplinary teaming helps guide the organizational structure of the middle school day. The master schedule outlines parameters for student and teacher placement and builds in blocks of time for core area study as well as exploratory activities. It is, however, the team structure that provides the framework for subject specific as well as interdisciplinary instruction.

Interdisciplinary teaming is the framework for the middle school master schedule. By assigning teachers and students to teams, instructional strategies and practices can be put into place to help the unique needs of middle-level adolescents.

The interdisciplinary or learning team is made up of 2 to 5 teachers teaching up to four curriculum areas: science, mathematics, social studies, and language arts (Carnegie Council On Adolescent Development, 1989; Erb & Doda, 1989; National Middle School Association, 1995). These teachers share common students, class periods, planning time, team development training, and commitment to students (Dickinson & Erb, 1997; National Middle School Association, 1995; Spies, 1990). Interdisciplinary teaming breaks down isolation and anonymity (Arhar, Johnston, & Markle, 1988; Lipsitz, 1984), which can help create a better learning community. Teachers agreed that the social support and understanding from team members were significant benefits to teaching (Mac Iver, 1990).

Secondary schools are often times organized by academic departments. Team structure and placement organize middle schools differently. This means that the relationship between students and teachers cuts across subject areas. The mathematics teacher is near the social studies teacher who is near the science teacher. The entire team has a chance to talk to and about the student. This makes the relationship between the student and the team multidimensional.

Common planning time allows teachers a forum for sharing their thoughts and concerns about students (Carnegie Corporation of New York, 2000; Erb, 1987; Erb & Stevenson, 1999; Merenbloom, 1988). Team meetings allow each teacher to provide input on the student, thus giving an overall picture of the child. For example, a student may be doing poorly in mathematics but very well in language arts. Teachers can identify and isolate the problem and then offer student-centered assistance. The same would be true for a student who is coming late to every class. In a subject-centered

school, the mathematics teacher may never know that the student was coming late to his other classes. In a middle school, all team teachers would know and be able to communicate back and forth with each other. The problem would be identified, and a solution would be rendered. Common planning time has also shown to positively affect the coordination of student assignments, parent contacts, and curriculum coordination (Carnegie Corporation of New York, 2000; Erb & Stevenson; 1999).

Middle school teams can vary in their structural composition. Two, three, four, and five member teams can deliver the core curriculum to students (Rottier, 1996). Differences in the structural composition, as well as affective characteristics, could influence the academic, behavioral, and social aspects of the interdisciplinary team. This is particularly true for average students (Powell, Farrar, & Cohen, 1985). Understanding how different size teams fit into the daily school schedule is important when planning academic programs for middle school children.

Two-person teams are designed to work with 50-60 students. However, 48 students work well for a group process because 48 is divisible by 2, 3, 4, 6, 8, 12, 16, and 24. Teachers on two-person teams usually hold multiple endorsements. An example of a teaching assignment is that Instructor A teaches mathematics and science. Instructor B teaches social studies and language arts. Both teachers may teach reading. Two-person teams allow for flexible scheduling because 50-60 students are assigned to a team of two teachers. How blocks of time for core area instruction are used can vary a great deal. Mathematics might be the first thing in the morning on Monday and the last thing in the day on Friday. Subjects may not be taught everyday and the ability to offer thematic units is much easier than with larger

teams (Dickinson & Erb, 1997). The two-person team allows for the entire group to be together easily. For example, a video on the civil war does not need to be shown more than once. All of the students could view the movie at one time. There is flexibility in terms of time and opportunities for curriculum integration can be maximized (Rottier, 1996).

The three-teacher team is made up of three teachers each teaching multiple sections of one curriculum and up to two sections of another. Each core area is taught three times during a standard day. An example of this type of teaching is: Instructor A teaches three science and two social studies classes. Instructor B teaches three mathematics classes and one language arts and one reading class. Instructor C teaches two language arts classes, two reading classes, and one social studies class. Teams are still able to switch students around and easily manipulate the schedule.

The four-teacher team again either involves educators teaching more than one subject area or teaching one subject, but doing it across grade levels. Tables 2 and 3 represent the differences in this arrangement. Either way, teachers work with 100-120 total students. One of the benefits of the across grade level teaming is that teachers can stay with students for 2 years. This allows for a child and an adult to develop a deeper relationship.

The last configuration of teaming that is generally used is the five-person team. This type of teaming requires that teachers only teach one subject area. Team sizes range from 125-150 students. This type of teaming allows for teachers to work with only one subject area while attending to the physical, social and emotional needs of adolescents (see Table 4).

Table 2

Four-Teacher Team, One Grade Level (Rottier, p. 11)

Four Teacher Team			
100-120 Students			
Teacher A	Teacher B	Teacher C	Teacher D
Mathematics	Science	Language Arts	Social Studies
Mathematics	Science	Language Arts	Social Studies
Mathematics	Science	Language Arts	Social Studies
Mathematics	Science	Language Arts	Social Studies
Reading	Reading	Reading	Reading

Table 3

Four-Teacher Team, Across Grade Levels (Rottier, p. 12)

50-60 Seventh Grade Students			
50-60 Eighth Grade Students			
Teacher A	Teacher B	Teacher C	Teacher D
Mathematics 7	Science 7	Language Arts 7	Social Studies 7
Mathematics 7	Science 7	Language Arts 7	Social Studies 7
Mathematics 8	Science 8	Language Arts 8	Social Studies 8
Mathematics 8	Science 8	Language Arts 8	Social Studies 8

Table 4

Five-Teacher Team (Rottier, p. 13)

125-150 Students				
Teacher A	Teacher B	Teacher C	Teacher D	Teacher E
Mathematics	Science	Language Arts	Social Studies	Reading
Mathematics	Science	Language Arts	Social Studies	Reading
Mathematics	Science	Language Arts	Social Studies	Reading
Mathematics	Science	Language Arts	Social Studies	Reading
Mathematics	Science	Language Arts	Social Studies	Reading

A middle school schedule will allow for a variety of interdisciplinary team sizes. When a 6-8 grade building has a comparable number of students in each grade level, the master schedule works best by keeping grade level exploratory blocks coupled with core blocks. In other words, a set amount of time is given to the team as well as the exploratory teachers. Grade levels will typically have the same time during the instructional day for core and exploratory classes. Table 5 details a master schedule for an evenly divided 900-student middle school. This middle school runs an 8 period day plus a zero hour homeroom.

A middle school with 300 students in the seventh grade would typically have 12 core area teachers. How the school divides the staff into interdisciplinary teams depends on decisions made by the administrative and teaching staff. A 4-4-4, 5-4-3, 5-5-2, or 3-3-4 staff configuration could be used.

In summary, interdisciplinary teaming is an important component to effective middle-level education. Arranging teams of teachers into a flexible master schedule can enhance the opportunities for academic, social, and emotional development of students. Common planning time and team meetings provide educators an opportunity to discuss the needs of individual students as well as a chance to provide immediate feedback to them. In the long run, teaming increases the amount and type of information teachers share about students, while also decreasing the obstacles of communication that may impact student development. Depending on the types of teacher endorsement and number of children per grade level, middle school instructional teams can vary in size, ranging from 2-5 teachers. The size of the team will impact the structural set-up of the master schedule.

Table 5

Master Schedule

900 Student Middle School			
Master Schedule			
Period	6th Grade	7th Grade	8th Grade
0 (Homeroom)	Homeroom	Homeroom	Homeroom
1	Exploratory	Core	Core
2	Core	Exploratory	Core
3	Core	Exploratory	Core
4	Core	Core	Core
5	Core	Core	Core
6	Core	Core	Core
7	Core	Core	Exploratory
8	Core	Core	Exploratory

Teaming Influences

On the surface, teaming could appear to be simply grouping teachers. The fact is that teaming is much more than just grouping. Teaming includes affective factors such as commitment, trust, purpose, communication, humor, involvement and process orientation (Dickinson & Erb, 1997; George, et al., 1992; Stevenson, 1992). These factors, as well as other goals, have to be worked toward in order for middle school teams to be effective. It is through the process of working toward the goals that the team defines itself (Dickinson & Erb, 1997). Teams that stay together more than 1 year are more likely to reach goals, such as curriculum integration (Harvey & Drolet, 1994; Schumacher, 1992). Integration of the curriculum into core areas cannot occur without commitment, trust and communication. Although grouping may start the conversion from individual teacher to learning team, relationship building, time, overcoming adversity, and sharing strengthen the team. George and Stevenson (1988) conducted surveys of 82 award-winning middle schools. They discovered that the best teams were successful on both an academic and social level. These best teams were exceptional at monitoring student progress and communicating that progress to parents. These teachers also worked hard at helping students build feelings of unity and belongingness. Students who were on these best teams showed significant progress in academic areas.

The effects of teaming on student achievement, behavior, attendance and sense of community is for the most part inconclusive (Hough, 1995). While there are plenty of articles and useful information on middle schools and teaming, the research based studies are few in number (Dickinson & Erb, 1997). Armstrong (1977) believes that

research studies are lacking because these informational and promotional articles are so voluminous in number that teaming appears to be supported by empirical research. Any attempt to validate the effects of teaming would be a waste of time because it would be viewed as a petty attack on an intuitive truth (Armstrong, 1977). The effects of teaming, however, are not necessarily known and an intuitive truth about teaming does not exist. Research on teaming, including data gathered from studies comparing middle-level and junior high schools as well as data gathered by studying interdisciplinary teams within and between the middle schools, are reviewed next.

Achievement. The research on the effects of middle school teaming on student achievement is inconclusive (Armstrong, 1977; Dickinson & Erb, 1997). Scholz (1978) analyzed 65 studies comparing the effects of teaming on student achievement. Of the 65 studies, 36 found no significant difference between teamed and unteamed classes, 19 found a difference favoring teaming, and 11 found differences favoring junior high.

Cotton (1982) analyzed 13 studies and 3 large-scale reviews for the effects of teaming and student achievement. Eleven studies indicated that teaming did not influence academic achievement while two studies supported teaming influences on achievement. Traditional teaching methods were not credited with significantly higher achievement rates. Armstrong (1977), Gamsky, (1970) and Cooper and Sterns (1973) also found that teaming did not significantly influence student academic achievement.

Bradley (1988) and Sharts (1998) found mixed results in their studies. Bradley concluded that teaming impacted heterogeneously grouped mathematics students, but not high ability ones. High ability students were most successful in a traditional

mathematics class. Sharts found that teaming impacted mathematics achievement, but not reading and writing achievement.

George and Oldaker (1985-1986) analyzed 130 exemplary middle schools and found that student achievement was affected by a move to the middle-level concept. Sixty-two percent of the respondents described consistent academic improvement, while 28% supplied specific results such as California Achievement Tests or Iowa Test of Basic Skills that showed academic. The significant impact of teaming on student achievement is also supported by the findings of Sinclair (1980), Ferrara (1993) and Hall (1993). Research findings during the latter part of the 20th century were mixed. Dickinson and Erb (1997) believe that older studies might have supported not only interdisciplinary team organization, but also team teaching. This would mean that dated research might not be a valid measure of interdisciplinary team effectiveness, but rather a measure of how well two teachers worked together in the same classroom.

Behavior and attendance. The establishment of the middle concept seems to have a positive effect on student attendance and behavior (Cotton, 1982; George & Oldaker, 1985-1986). George and Oldaker's research of 135 exemplary middle schools found that approximately 80% of the school officials surveyed noted a significant reduction in suspension, 60% expelled fewer students, and 90% observed an increase in staff confidence in handling disruptive students. Teaming has allowed interdisciplinary teachers the opportunity to develop consistent procedures when dealing with students. Positive increases in student behavior are found more often with teams that stay together for more than 1 year (George et al., 1987). Although it

appears that the adoption of the middle-level concept positively impacts attendance and behavior, different results can still be found. Bradley (1988) found no difference between teamed and traditional students with respect to discipline and attendance. Hall (1993) determined that students in the traditional junior high structure attended school more regularly than the teamed students and that there was no difference between the groups with respect to behavior. Ferrara (1993) found no correlation between student behavior and the perceived strength of the interdisciplinary team teachers. In other words, the interdisciplinary team did not matter; changes in student behavior were not significant.

Sense of community. Teaming has a significant impact on student perceptions about community (Arhar, 1991; Cotton, 1982; Ernest, 1991; Gamsky, 1970; George & Oldaker, 1985-1986; Sinclair, 1980) when compared to traditional junior high programs. One of the goals of the middle school is to create a school-within-a-school or house where community can be established (Carnegie Council on Adolescent Development, 1989; Erb & Doda, 1989; Norton & Lewis, 2000). George and Oldaker's (1985-1986) research on 135 middle schools supports the magnitude to which community has been established in middle schools. "Over 90% believed that student self-concept and social development also benefited. Not a single respondent reported negative effects on student personal development" (p. 81). Middle schools have put a lot of emphasis on establishing communities within the school (Galletti, 1998; Norton & Lewis, 2000). The reorganization of the junior high into the middle school has had a significant impact on student perceptions about community. Educators and parents feel that the middle-level program has established a type of

community that enhances student maturation while also providing an opportunity to work with problems and issues before they get out of hand (George & Oldaker, 1985-1986). It has been determined that the establishment of a positive community can reduce the risk of school violence (MacDonald, 1997). This is particularly important in light of the number of school violence issues in the last half of the 1990s.

Expert opinion believes that teaming has an effect on student achievement, behavior and perceptions about community, but just not always in a detectable and measurable way (Arhar, Johnston, & Markle, 1989; Wang, Haertel, & Walberg, 1993). Integration of the curriculum, quick identification of student problems, and the development of team spirit are all benefits of teaming (Mac Iver, 1990). The amount of time and energy spent validating the effectiveness of the middle school could explain the limited research on team size and the effects on student achievement, behavior and perceptions about community.

Team size. Little research can be found that compares the size of the interdisciplinary team with student achievement, behavior, attendance, or sense about community. The research that can be found may be too limited to draw specific conclusions about team size and its effects.

Hassler (1994) and Williams (1999) both found mixed results in their dissertation surveys on interdisciplinary teaming. Hassler's study focused on determining whether the delivery system (team size) had an effect on academic achievement, self-concept, attendance, and behavior of seventh grade students in an

affluent Philadelphia suburb. Delivery systems for the seventh grade students included two-, three-, and five-member teams. Analysis of the data concluded that:

1. There was no significant difference in mathematical concepts between the teams.
2. There was a significant difference in reading comprehension between the two- and five-teacher team, but not between the two- and three-teacher team.
3. There was no significant difference found in student self-concept.
4. There was no significant difference found in attendance.
5. There was no significant difference found in behavioral referrals.

Williams' (1999) study focused on incoming sixth graders. Students were randomly placed on a two-or four-teacher team. Standardized test scores and grade point average were used to determine student achievement. Attendance data and student responses to the Student Satisfaction Survey, published by the National Association of Secondary School Principals, were used to determine student satisfaction. Student achievement was found to be significantly higher for the two-teacher team. There was no difference found in student satisfaction between the delivery systems.

Research about the effects of school climate on student achievement, behavior, attendance, and perceptions about community can be found in the literature. George and Shewey (1994) argue that, "Academically successful schools were those where teachers and students were able to see themselves as part of the same group, as members of the same team" (p. 13). The most successful school attended to the social

side of learning (Rutter, Maughan, Mortimore, Ouston, & Smith, 1979). Many young adolescents find it easier to talk to a teacher than a parent. This is especially true in the area of personal feelings. Students' need for support is more than acceptance; it is a need to feel a part of the adult world (Vanhoose & Strahan, 1988). This type of climate makes a difference in student achievement because information about students is shared from the perspective of students as individual members of society (Beane, 1990). Homans (1950) believed that the more frequently people interacted with each other the stronger the sentiment of friendship. He also believed that the more people interacted, the more alike their activities would be when compared to others with whom they have little interaction. Interdisciplinary teaming encourages the interactions and discussions to take place day after day. Teaming encourages the development of a community that promotes student success.

Personal insight. Two years preceding this dissertation two eighth grade teachers were put together as an interdisciplinary team. One teacher was responsible for the planning of English and mathematics while the other was responsible for the planning of science and history. Although each teacher was responsible for planning a specific subject, all of the classes were team-taught. The entire team of students took class in a double-room.

During the course of the year the students were given more chances to interact with each other because their team was small and they remained together for a long period of time. This was different than the other eighth grade teams. Other eighth graders changed classes every 45 minutes, and they did not stay together as a group. Compared to the students on the two-teacher team, students on the other teams did not

have a significant amount of time together. They were never given the opportunity to interact like the students on the two-teacher team.

Students on the two-teacher team appeared to have developed friendships and bonds with each other as well as their teachers. There appeared to be a difference in the interactions that make up community. This team became one that parents requested because they knew that students were excited about coming to school. Parents also felt that students were achieving more and misbehaving less. Perhaps the most important observation was that students appeared to have a developed sense of community. They were more than classmates, they were friends. They knew the triggers that set each other off, but they also knew what each person needed in order to feel supported.

After observing this team for two years, there was a sense that this team configuration positively impacted students. Teachers on the other eighth grade teams did a great job of working with their students, too. They, however, did not have the chance to interact to the level that the two-teacher team did. This interaction, caused by the configuration of a two-teacher team, appeared to affect student sense of community as well as impact achievement.

Summary. Early research regarding teaming and its effects on academic achievement are inconclusive. Later research appears to indicate that teaming might influence achievement. Student behavior appears to be linked to teaming, but this does not hold true all of the time. Teaming has proven to impact student perceptions about community. The question is whether or not team size affects student

achievement, behavior, attendance or perception about community, which is the focus of this dissertation.

Chapter 3

Methodology

Research Design

This quasi-experimental study used a pretest-posttest nonequivalent-groups design.

Independent variables. The independent variables were interdisciplinary team and grade level. Interdisciplinary team (or team) referred to 1 of 3 groups of teachers in the seventh grade. Team A was composed of 3 teachers, Team B was composed of 4 teachers, and Team C was composed of 5 teachers. There were two grade level data collection times, the second semester of sixth and seventh grade.

Dependent variables. There were four dependent variables. Absence rate referred to the number of days that a student was absent during the school year. A day was defined as 8 periods of absence. These periods did not have to be consecutive. Referral rate referred to the number of behavior referrals by a student that was turned in to the office during the school year. Academic achievement referred to the grade level cumulative grade point average. Community referred to the application of five ethical principles: respect for autonomy, nonmaleficence, beneficence, justice, and fidelity to the interactions and relationships between students and faculty, specifically student to teacher, student to student, and teacher to student (Schulte et al., 2002).

Sample

The sample included 269 sixth grade students from 3 interdisciplinary teams within a large suburban middle school. The sixth grade was made up of 133 female

and 144 male students. The parents of 8 students (4 females and 4 males) requested that their children be removed from the study resulting in a sample size of 269 students in sixth grade. There were 35 students in Pre-Algebra, 46 students in Challenge Mathematics, and 196 students in Mathematics 6. The 6A team was composed of 90 students while 6B and 6C had 86 and 98 students, respectively. Thirty-nine students received special education services. The makeup of students across all three teams was fairly similar.

Students were assigned to a particular team according to mathematics placement. Every attempt was made to balance mathematics levels across the teams. This meant that approximately one-third of the Pre-Algebra students were placed on each team. The same was true for Challenge Mathematics and Mathematics 6 students. Special education students who received resource assistance were assigned to the 6A or 6C team while behaviorally impaired students were assigned to the 6B team. Students who received only speech-language services were spread across all three teams.

The student body was made up of 95.2% Caucasian, 2.55% Asian/Pacific Island, 1.16% Black, 0.9% Hispanic, and 0.12% American Indian. The free and reduced lunch rate was 1.05% while the daily attendance rate was 96.02%.

Team Descriptions

The seventh grade interdisciplinary teams were similar yet different from each other in a lot of ways (see Table 6). All three teams taught the core subjects periods 1,2, and 5-8. Periods 3 and 4 were individual and team planning times, and period 7 was Team Study Hall. Teachers did not perform any supervisory duty during

Table 6

Similarities and Differences for Seventh Grade Interdisciplinary Teams

Description	Team	Team	Team
	7A	7B	7C
Number of Students	69	83	109
Number of Teachers	3	4	5
Number of Female Teachers	2	3	4
Number of Male Teachers	1	1	1
Minimum Number of Weekly Team Meetings	2	2	2
Number of Teacher Preps	2	2	1
Special Education Students on Team	Yes	Yes	Yes
Teacher Supervision	No	No	No
Language Arts is Taught to Back to Back	No	Yes	No

their block of planning time. Building administration expected all teachers to use this time to plan as an individual, team, or subject area.

Each team was required to meet as a team a minimum of two times a week. The first team meeting was an agenda setting meeting, and the second was the discussion about the previously generated agenda items. The latter meeting was more formal in nature, and a team counselor and administrator were expected to be in attendance. Although each team built its own agenda, common topics were discussed. The following items were on each weekly agenda: team issues, special education, high ability learning, learning center, counselor's comments, administrative notes, and upcoming dates. One teacher from each team assumed the role of Team Leader. This person was responsible for carrying out the agenda at each meeting. Regardless of the team, all teachers were expected to be student advocates.

The method of language arts delivery was unique in this school. Language arts was a two-period class. Several years before this study, the school improvement team had determined that the school district's reading and English curriculum would best be taught through an integrated language art's class. Integration of the curriculum allowed teachers to focus on writing or reading for an extended period of time. Students did not have to complete both a reading and writing activity everyday as long as they completed the adopted curriculum during the course of the school year. This flexibility gave teachers a chance to make natural connections between English and reading.

Whoever the students had for the first language arts class, they also had for the second. Even though language arts was a double-period class, it did not always

meet for two consecutive periods. A two-period class, in this case, simply meant that students and teacher were together two times a day for language arts. This scheduling plan increased the amount of time students spent with one teacher in the area of language arts. This set-up also enabled teachers to work on special projects as well as find ways to naturally integrate the skills of reading and writing.

Team 7A. There were 69 students on this team. There were two females and one male teacher on Team 7A. One female teacher taught four sections of language arts and one section of math. The other female teacher taught three sections of social studies and two sections of language arts while the male teacher taught three sections of science and two sections of math. Depending on the student, they might have the same teacher for language arts and mathematics or language arts and social studies.

Because of the language arts double period, students were generally grouped for multiple periods. For example, students who had teacher A for math and language arts were with her for three periods. This left only two options for science and social studies. At least one-half of these students would have been in science and social studies together. This meant that students spent more time together in a small group than students on Team 7B or 7C did. This also meant that students spent more time in a specific teacher's room than students on the other two teams. In comparison to Team 7B and 7C, Team 7A students did not have as many opportunities to interact with a large peer group.

Team 7B. There were 83 students on this team. There were three females and one male teacher on Team 7B. Two of the female instructors taught four sections of language arts each, while the other female instructor taught four sections of

mathematics. The male instructor taught four sections of science. Each instructor was responsible for teaching one section of social studies. All four instructors taught their section of social studies eighth period. This enabled teachers to flexibly group students, as well as provide large group instruction without disrupting the rest of their classes.

The two period language arts classes were taught back to back. This meant that students in period one language arts were also in period two. Because the two language arts teachers had identical schedules, they were able to use a double classroom and team-teach the subject. These teachers also had the flexibility to work only with their assigned group. During the course of the year, the two language arts teachers did a variety of team and individual teaching. Students on this team had the opportunity to interact with a larger peer group than 7A, but these students did not have the opportunity to spend as much time in one teacher's room as the 7A students.

Team 7C. There were 109 students on this team. There were four females and one male teacher on Team 7C. Each teacher taught only one subject. The four female instructors either taught language arts, social studies, or mathematics while the male instructor taught science. Because this team had more teachers, there was more mixing of students. Language arts classes for periods 1, 2, 6 and 8 were almost always team-taught. Due to the nature of the master schedule, fifth period language arts classes could not be team-taught. To counter-act this situation, the language art's teachers periodically flipped student schedules, so they could experience a team-taught language arts class. Students on this team were able to interact with a larger peer group than students on the 7A and 7B Teams. Students on this team, however, did not

have as much time with one student or one group of students. Other than language arts, students were only able to have a specific team teacher for one period of core subject instruction. This meant that they did not spend as much time in one teacher's room as 7A or 7B students did.

Data Collection Procedures

Sixth grade students from an affluent suburban middle school were surveyed using the School Ethical Climate Index (see Appendix A) during their third hour mathematics class on February 16, 2001. Third hour began at 9:40 A.M. Surveying students at this time helped minimize intervening variables caused by fatigue or hunger as well as helped to eliminate discussion between students about the survey. Teachers handed out surveys, read directions aloud, and collected the surveys after students had completed them.

Prior to distribution of the survey, parents were contacted in writing and explained the purpose of this study (see Appendix B). Parents were given an opportunity to remove their child from the study by returning a participation waiver to the office (see Appendix C). District officials were presented with this study and written permission from the Office of the Superintendent was received. All paperwork is on file at the district's central office. Institutional Review Board (IRB) approval was granted on June 27, 2001.

On February 12, 2002 students completed post-test surveys during their second period class. Configurations in the master schedule prevented students from being surveyed during their third period classes like the previous year. Second period began

at 8:49 A.M. The entire grade level was surveyed at one time minimizing the effects of intervening variables.

Student identification numbers provided access to demographic information. The numbers allowed the researcher to access behavior, attendance and grade point average from the district mainframe database. Only the researcher was allowed to see identifying information, and it was destroyed immediately after the collection of the data.

Instrument

The School Ethical Climate Index is a likert scale survey that applies five ethical principles: respect for autonomy, nonmaleficence, beneficence, justice, and fidelity to the interactions and relationships between students and faculty, specifically student to teacher, student to student, and teacher to student (Schulte et al., 2002) (see Appendix A).

Reliability. The Cronbach's alphas for the three subscales: student to teacher, student to student, and teacher to student were .79, .84, and .94, respectively, for the sixth grade data.

Content validity. A group of 23 persons (3 teachers, 3 students, 7 administrators, 7 counselors, and 3 College of Education professors) reviewed an 80-item School Ethical Climate Index (SECI). They were asked to rate the appropriateness of the SECI items in measuring the ethical climate of middle and high schools on a 3-point scale (1 = not appropriate, 2 = marginally appropriate, and 3 = very appropriate). Based upon input from the content validity panel and reliability analysis, the final version of the SECI included 49 items (see Appendix A).

Construct validity. Factor analysis by Schulte et al. (2002) indicated that the School Ethical Climate Index measures a teacher and student dimension. The results also found that the School Ethical Climate Index can differentiate between middle and high school levels.

Research Questions

The following questions were addressed and answered as part of this study on middle-level teaming and student achievement, behavior, attendance, and perceptions about community.

1. Was there a significant difference in academic achievement among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by grade point average when compared to data gathered in the sixth grade?
2. Was there a significant difference in rates of referral among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by office referral counts when compared to data gathered in the sixth grade?
3. Was there a significant difference in rates of attendance among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by office attendance records when compared to data gathered in the sixth grade?
4. Was there a significant difference in perceptions about community among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by the School Ethical

Climate Index (Schulte, et al., 2002) when compared to data gathered in the sixth grade?

Data Analysis

All four research questions were answered using a two-way analysis of variance conducted at a .01 alpha level to control for Type I errors. The dependent variables were absence rate, referral rate, academic achievement and sense of community. The independent variables were interdisciplinary team and testing time.

Chapter 4

Analysis of Data

This study explored the impact of interdisciplinary team size on student achievement, behavior, attendance, and perceptions about community in an affluent Midwestern suburban middle school. Data related to each of these dependent variables were gathered through the use of the district's School Information and Management System (SIMS) as well as the School Ethical Climate Index (SECI) (Schulte et al., 2002). Two hundred sixty-nine students began the study in the sixth grade. During the summer a new middle school was opened and a number of students transferred. Of the remaining 213 students, 210 (98.6%) completed the study. The three students who did not complete the study were originally removed in the sixth grade by their parents.

Research Questions

Four research questions were addressed in the study. The answers and results of the statistical analyses follow.

Research Question 1

Was there a significant difference in academic achievement among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by grade point average when compared to data gathered in the sixth grade?

Academic achievement. Academic achievement was measured using grade level cumulative grade point average, which was gathered for each student as a sixth grader and then again as a seventh grader. In this school, grade point average is

measured using a 4.0 scale. A grade of 1 earned 4 mark points, a grade of 2 earned 3 mark points, a grade of 3 earned 2 mark points, and a grade of 4 earned 1 mark point. Students did not receive any mark points for failing a course.

Results of the two-way ANOVA with grade level as the within-subjects factor and team as the between-subjects factor indicated that there was a statistically significant grade level main effect and grade level by team interaction ($F(1, 207) = 12.82, p < .0005$; $F(2, 207) = 14.24, p < .0005$, respectively). The main effect for team was not statistically significant ($F(2, 207) = 0.94, p = .393$). To follow-up the significant grade level by team interaction, simple main effects tests were conducted for each variable at the levels of the other variable. The simple main effects tests for team at each level of grade indicated that at both the sixth and seventh grade levels grade point average did not differ significantly across the teams ($F(2, 207) = .122, p = .89$; $F(2, 207) = 3.62, p = .03$, respectively). The simple main effects test for grade level at each level of team indicated that for Team 7A and Team 7C grade point average decreased significantly from sixth to seventh grade ($F(1, 207) = 8.62, p = .004$; $F(1, 207) = 33.43, p < .0005$, respectively) (see Table 7). Grade point average for Team 7B did not decrease significantly from sixth to seventh grade ($F(1, 207) = 3.97, p = .05$) (see Table 7).

Research Question 2

Was there a significant difference in rates of referral among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by office referral counts when compared to data gathered in the sixth grade?

Table 7

Academic Achievement across Teams by Grade Level

Team	<u>n</u>	GPA 6 <u>M</u>	<u>SD 6</u>	GPA 7 <u>M</u>	<u>SD 7</u>
7A	54	3.61	0.37	3.51	0.47
7B	65	3.60	0.38	3.67	0.35
7C	91	3.63	0.37	3.48	0.49
Total	210	3.62	0.37	3.54	0.45

Note: 7A was the three-member, 7B was the four-member and 7C was the five-member teacher team.

Behavior referrals. Student referrals were measured by counting the number of behavior referrals for each team during the course of the school year. Results of the two-way ANOVA for student referral rates with grade level as the within-subjects factor and team as the between-subjects factor indicated that there was a statistically significant grade level main effect ($F(1, 207) = 8.65, p=.004$). The mean number of referrals at the sixth grade level ($M=0.26, SD=1.05$) was significantly less than the mean number of referrals at the seventh grade level ($M=0.47, SD=1.35$). There was not a significant grade level by team interaction ($F(2, 207) = 0.515, p=.598$) or team main effect ($F(2, 207) = 0.200, p=.819$) (see Table 8).

Research Question 3

Was there a significant difference in rates of attendance among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by office attendance records when compared to data gathered in the sixth grade?

Attendance. Student rates of attendance were measured by recording the number of periods of absence each student acquired during the school year. The periods of absence could have been either consecutive or nonconsecutive. A total of eight consecutive or nonconsecutive periods of absence equated to one day of absence.

Results of the two-way ANOVA for student attendance rates with grade level as the within-subjects factor and team as the between-subjects factor indicated that there was no statistically significant grade level main effect, team main effect or grade level by team interaction ($F(1, 207) = 1.19, p=.276$; $F(2, 207) = 0.32, p=.829$; $F(2, 207) = 0.41, p=.664$, respectively (see Table 9).

Table 8

Referral Rates across Teams by Grade Level

Team	n	Referral 6 <u>M</u>	<u>SD</u> 6	Referral 7 <u>M</u>	<u>SD</u> 7
7A	54	0.20	0.56	0.44	1.66
7B	65	0.38	1.30	0.49	1.16
7C	91	0.21	1.09	0.47	1.29
Total	210	0.26	1.05	0.47	1.35

Note: 7A was the three-member, 7B was the four-member and 7C was the five-member teacher team.

Table 9

Attendance Rates across Teams by Grade Level

Team	<u>n</u>	Attendance 6	<u>SD 6</u>	Attendance 7	<u>SD 7</u>
		<u>M</u>		<u>M</u>	
7A	54	6.26	5.02	7.09	5.74
7B	65	6.15	4.89	6.31	5.20
7C	91	6.16	5.42	6.29	5.11
Total	210	6.18	5.13	6.50	5.29

Note: 7A was the three-member, 7B was the four-member and 7C was the five-member teacher team.

Research Question 4

Was there a significant difference in perceptions about community among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by the School Ethical Climate Index (SECI) (Schulte et al., 2002) when compared to data gathered in the sixth grade?

Sense of community. Student perceptions about community were measured using the SECI (Schulte et al., 2002). The community of the team and school was defined by applying five ethical principles: respect for autonomy, nonmaleficence, beneficence, justice, and fidelity to the interactions and relationships between students and teachers. Students were asked to complete the SECI in the spring of their sixth grade year and then again in the spring of their seventh grade year (see Appendix A). Means and standard deviations for the overall sample for each item of the SECI items are listed in Table 10.

Results of the two-way ANOVA for the *student to teacher* subscale with grade level as the within-subjects factor and team as the between-subjects factor indicated that there was no statistically significant grade level main effect, team main effect or grade level by team interaction ($F(1, 206) = 2.170, p = .142$; $F(2, 206) = .105, p = .900$; $F(2, 206) = .319, p = .727$), respectively (see Table 11).

Results of the two-way ANOVA for the *student to student* subscale with grade level as the within-subjects factor and team as the between-subjects factor indicated that there was no statistically significant grade level main effect, team main effect or grade level by team interaction ($F(1, 206) = 1.071, p = .302$; $F(2, 206) = .053, p = .948$; $F(2, 206) = .316, p = .730$), respectively (see Table 12).

Table 10

School Ethical Climate Index Mean and Standard Deviation Broken Down by Grade Level

Item	<u>n</u>	<u>M</u>	<u>n</u>	<u>M</u>
	6	<u>SD</u>	7	<u>SD</u>
		6		7
Student to Teacher Subscale				
1. Students' work shows effort.	209	4.05 0.68	209	4.13 0.68
2. Students follow teachers' directions.	209	4.26 0.74	209	4.11 0.75
3. Students complete assignments on time.	209	4.03 0.83	209	3.93 0.78
4. Students are respectful to teachers.	208	4.41 0.74	209	4.33 0.66
5. Students actively participate in class discussions.	208	3.90 0.90	208	3.87 0.84
6. Students pay attention during class.	208	4.01 0.81	209	3.96 0.80
7. Students accept responsibility for getting help when they need it.	209	4.20 0.86	208	3.97 0.89
8. Students let their teachers know when commitments cannot be met.	208	3.67 1.05	209	3.71 0.99

Item	<u>n</u>	<u>M</u>	<u>n</u>	<u>M</u>
	6	<u>SD</u>	7	<u>SD</u>
9. Teachers can trust students to behave appropriately in unsupervised situations.	209	4.01 1.00	209	4.00 0.91
Student to Student Subscale				
10. Students feel free to discuss their ideas with their classmates.	203	3.96 0.93	202	4.06 0.92
11. Students are considerate of their classmates' feelings.	207	3.92 0.91	209	3.74 0.95
12. Students make new students feel welcome at this school.	208	4.38 0.83	209	4.33 0.82
13. Students make fun of classmates who are different from themselves.	207	(3.80) 1.18	208	(3.51) 1.18
14. Students go out of their way to help their classmates.	208	3.25 0.94	209	3.30 0.94
15. Students encourage their classmates when appropriate.	208	3.73 1.00	208	3.76 0.97
16. Without cheating, students share ideas, class notes, and other materials with their classmates	208	3.91 0.99	209	4.11 0.84
17. When working in a group with their classmates, students do their fair share of the work.	208	3.95 0.90	209	3.86 0.94
18. Students treat their classmates with respect.	208	4.03 0.90	209	3.91 0.86

Item	<u>n</u>	<u>M</u>	<u>n</u>	<u>M</u>
	6	<u>SD</u>	7	<u>SD</u>
		6		7
19. Students defend classmates who are being picked on by others.	209	3.47 1.09	209	3.34 1.05
20. Students respect classmates' personal belongings.	208	4.11 0.98	209	3.90 3.93
21. Students are treated differently because of the way they dress.	209	(3.63) 1.30	209	(3.54) 1.29
22. Honor roll students are accepted by their classmates.	207	4.22 0.97	209	4.49 0.82
23. Students feel it is O.K. to walk away from a fight.	209	3.86 1.07	209	3.79 1.09
Teacher to Student Subscale				
24. Teachers are available to students outside of class time.	209	4.19 0.90	209	4.00 0.97
25. Teachers praise students for excellent work.	208	3.72 1.18	209	3.65 1.12
26. Teachers help students improve their study habits.	208	4.05 1.01	209	3.88 1.06
27. Teachers present more than one point of view.	209	4.09 0.91	209	4.03 0.88
28. Teachers treat all students with respect.	209	4.39 0.92	209	4.24 0.96

Item	<u>n</u>	<u>M</u>	<u>n</u>	<u>M</u>
	6	<u>SD</u>	7	<u>SD</u>
		6		7
29. Teachers encourage students to ask questions if they are appropriate.	209	4.43 0.87	209	4.33 0.86
30. Teachers give students the opportunity to practice what they learn.	207	4.27 0.92	208	4.30 0.86
31. Teachers are well prepared for their classes.	208	4.45 0.79	209	4.45 0.75
32. Teachers are positive role models for students.	209	4.25 0.85	209	4.21 0.78
33. Students and teachers cooperate with each other.	208	4.11 0.87	209	4.11 0.77
34. Teachers respect the cultures of all students.	209	4.67 0.70	209	4.72 0.67
35. Teachers' tests cover what was taught.	209	4.50 0.71	209	4.36 0.80
36. Teachers are available to all students on an equal basis.	209	4.11 0.84	209	4.10 0.85
37. Teachers help students with special needs.	209	4.41 0.87	209	4.33 0.84
38. Teachers provide students with praise when appropriate.	208	3.94 1.02	209	3.89 0.97

Item	<u>N</u>	<u>M</u>	<u>N</u>	<u>M</u>
	6	<u>SD</u> 6	7	<u>SD</u> 7
39. Teachers return assignments in a reasonable amount of time.	208	4.13 0.94	209	3.88 1.00
40. Students who have questions about grades feel free to talk to their teachers.	206	4.01 1.04	209	4.00 1.01
41. Students feel comfortable seeking help from teachers outside of class time.	209	3.95 0.99	209	3.89 1.00
42. When school-related problems arise, students feel free to talk with teachers.	209	3.56 1.12	209	3.61 1.03
43. Students can trust teachers with personal information.	209	3.78 1.17	208	3.87 1.09
44. Teachers promote cooperation among students.	206	4.28 0.80	208	4.23 0.76
45. Course exams, projects, and papers are graded fairly.	208	4.46 0.77	209	4.38 0.76
46. Teachers follow through on reasonable requests made by students.	209	3.78 0.91	209	3.81 0.94
47. Teachers allow students to choose topics for course projects or papers.	209	3.52 1.11	209	3.44 1.14
48. Teachers are attentive to students during meetings.	209	3.71 1.14	208	3.80 0.99

Item	<u>N</u>	<u>M</u>	<u>N</u>	<u>M</u>
	6	<u>SD</u> 6	7	<u>SD</u> 7
49. Teachers allow students to express their opinions even if they are different from the teachers'.	208	4.04 0.95	208	4.10 1.00

Note: The mean for numbers 13 and 21 were re-coded.

Table 11

Student to Teacher Subscale across Teams by Grade Level

Team	<u>n</u>	Student to Teacher 6 <u>M</u>	<u>SD 6</u>	Student to Teacher 7 <u>M</u>	<u>SD 7</u>
7A	53	4.06	0.49	3.96	0.58
7B	65	4.04	0.50	4.02	0.52
7C	91	4.08	0.56	4.01	0.51
Total	209	4.06	0.52	4.00	0.53

Note: 7A was the three-member, 7B was the four-member and 7C was the five-member teacher team.

Table 12

Student to Student Subscale across Teams by Grade Level

Team	<u>n</u>	Student to Student 6 <u>M</u>	<u>SD 6</u>	Student to Student 7 <u>M</u>	<u>SD 7</u>
7A	53	3.91	0.55	3.83	0.58
7B	65	3.85	0.56	3.85	0.56
7C	91	3.86	0.58	3.82	0.61
Total	209	3.87	0.56	3.83	0.59

Note: 7A was the three-member, 7B was the four-member and 7C was the five-member teacher team.

Results of the two-way ANOVA for the *teacher to student* subscale with grade level as the within-subjects factor and team as the between-subjects factor indicated that there was no statistically significant grade level main effect, team main effect or grade level by team interaction ($F(1, 206) = 2.06, p = .153$; $F(2, 206) = 0.539, p = .584$; $F(2, 206) = 2.519, p = .083$, respectively) (see Table 13).

Table 13

Teacher to Student Subscale across Teams by Grade Level

Team	<u>n</u>	Teacher to Student 6 <u>M</u>	<u>SD 6</u>	Teacher to Student 7 <u>M</u>	<u>SD 7</u>
7A	53	4.12	0.54	3.94	0.62
7B	65	4.10	0.60	4.16	0.50
7C	91	4.11	0.59	4.06	0.61
Total	209	4.11	0.58	4.06	0.59

Note: 7A was the three-member, 7B was the four-member and 7C was the five-member teacher team.

Chapter 5

Summary, Discussion, Implications

This study explored the impact of interdisciplinary team size on student achievement, behavior, attendance, and perceptions about community in an affluent Midwestern suburban middle school. Data were gathered through the use of the district's School Information and Management System (SIMS) as well as the School Ethical Climate Index (SECI) (Schulte et al., 2002). The dependent variables were (a) academic achievement, (b) student behavior, (c) student attendance, and (d) student perceptions about community. Independent variables were the interdisciplinary team and grade level. Statistical analyses were conducted through the use of the two-way analyses of variance (ANOVA). A total of 210 out of 213 students (98.6%) participated in the study.

Discussion

Team Placement was not Significant

The results of this study did not support the idea that interdisciplinary team size significantly impacted student achievement, behavior, attendance, or perceptions about community. Students on all three teams experienced academic and social success. In the case of this school, practitioners do not need to worry about the placement of students on a specific interdisciplinary team. All three teams were high achieving, and all three teams had similar results. This is important to the school administration as they answer questions about the effectiveness of their school. This may also be important to the administration if they have to defend the placement of a student on a specific team.

According to this study, school practitioners have flexibility when arranging interdisciplinary teams without affecting student achievement, attendance, behavior, or sense of community. The descriptive statistics for the data support this conclusion.

Achievement

Question 1: Was there a significant difference in academic achievement among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by grade point average when compared to data gathered in the sixth grade?

Mean grade point averages on a 4.0 scale for Team 7A, 7B, and 7C were 3.51 (SD = 0.47), 3.67 (SD = 0.35), and 3.48 (SD = 0.49), respectively. As measured by grade point average, students on all three teams attained a high level of academic achievement. Analysis of the data, through simple main effects tests, determined that students on the Team 7A and Team 7C experienced a significant decrease in grade point average from sixth to seventh grade. Students on Team 7B did not experience a drop in grade point average. To conclude that the decrease in grade point average was directly correlated to team size might be erroneous. Team 7A had three teachers, 7B had four teachers and 7C had five teachers.

This finding does not support previous research. Hassler (1994) found that there was a significant difference in reading comprehension between the two-teacher and five-teacher team, but not between the two-teacher and three-teacher team. Williams (1999) found significantly higher achievement rates for the two-teacher team when compared to the four-teacher team. The results of this study indicated that team size did not affect student achievement.

Behavior

Question 2: Was there a significant difference in rates of referral among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by office referral counts when compared to data gathered in the sixth grade?

Mean rates of referrals for Team 7A, 7B, and 7C were 0.44 (SD = 1.66), 0.49 (SD = 1.16), and 0.47 (SD = 1.29), respectively. Analysis of data determined that the mean number of referrals at the sixth grade level (M=0.26, SD=1.05) was significantly less than the mean number of referrals at the seventh grade level (M=0.47, SD=1.35). Even though there was a statistical difference between the sixth and seventh grade, referral rates were still low across each grade level. The low referral rate indicated that team size and team placement did not greatly affect behavior. This finding was similar to Hassler (1994) and Williams (1999) who determined that team size did not impact student referral rates.

Finding a statistically different referral rate between the sixth and seventh grade was not surprising. Previous research on the developmental stages of young adolescents has proven that as students enter in to puberty, they often switch back and forth between childhood and adulthood. At certain times middle level students lack the ability to make consistent rational decisions (Campbell, 1992; McKay, 1995). As students progress through their seventh grade year they enter deeper in to puberty. The difference between the sixth and seventh grade was right in line with theories of adolescent development. Determining that there was no difference between the three seventh grade teams was important, however. These data support the conclusion that

team size and team placement did not affect student behavior. No matter what team a student was placed on, behavior was similar.

Attendance

Question 3: Was there a significant difference in rates of attendance among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by office attendance records when compared to data gathered in the sixth grade?

Rates of attendance were determined by counting the number of consecutive or nonconsecutive periods a student was gone from school. Eight periods of absence equaled one day. The mean attendance rate for Team 7A students was 7.09 days (SD = 5.74), while the mean attendance rate for Team 7B and Team 7C students was 6.31 (SD = 5.20), and 6.29 (SD = 5.11) days, respectively. There was no significant difference found between team size and rates of attendance. Student absenteeism was low across all three teams. There were 176 student days during the school year. The grade level mean attendance rate of 6.50 (SD=5.29) meant that students were in school 96.3% of the time. Placing students on a team, regardless of the size, did not affect their rate of attendance. This finding was similar to Hassler (1994) and Williams (1999) who determined that rate of attendance was not impacted by team size.

Community

Question 4: Was there a significant difference in perceptions about community among seventh grade students participating in a three-member, four-member, or five-member interdisciplinary team as measured by the School Ethical Climate Index (Schulte, et al., 2002) when compared to data gathered in the sixth grade?

Students were asked to rate their perception of student to student, student to teacher, and teacher to student interactions on a 5-point scale. Mean scores for the *student to student* interactions for Team 7A, 7B, and 7C were 3.83 (SD =0.58), 3.85 (SD =0.56), and 3.82 (SD =0.61), respectively. Mean score for the *student to teacher* interactions for Team 7A was 3.96 (SD =0.58), while Team 7B was 4.02 (SD =0.52) and Team 7C was 4.01 (SD =0.51). *Teacher to student* interactions for the three teams were 3.94 (SD =0.62), 4.16 (SD =0.50), 4.06 (SD =0.61), respectively. There was no significant difference found between team size and student perceptions about community. In general, students perceived the interactions between *student to student*, *student to teacher*, and *teacher to student* as positive.

These findings were similar to previous research. Hassler (1994) was not able to find a difference in student self-concept across different sizes of teams. Williams (1999) was not able to find a difference in student satisfaction between delivery systems (team size). It appears that team size does not influence how students feel about school, themselves and the interactions that they have with other students and teachers.

Additional Findings

Although not directly related to this study, several additional findings contributed to the significance of this study.

Academic achievement related to perceptions about community. Further data analysis indicated that there were some differences between academic achievement levels and community perceptions. In an effort to better define the relationship between academic achievement and student perceptions about community, students

were placed in one of four groups based upon their grade point average: Group 1) 3.50 – 4.00, Group 2) 3.00 – 3.49, Group 3) 2.50 – 2.99, and Group 4) less than 2.50. A significant difference for community perceptions with respect to the SECI *student to student* subscale ($F(3, 205) = 4.18, p = .007$) across achievement levels was found (see Table 14). There was no significant difference for community perceptions with respect to the *student to teacher* subscale ($F(3, 205) = 2.21, p = .088$) or the *teacher to student* subscale ($F(3, 205) = 1.20, p = .313$) across achievement levels (see Table 15 and 16, respectively).

To follow-up the significant difference across achievement levels for the *student to student* subscale, the Tukey Pairwise Comparison test was conducted. The results of the pairwise comparison test indicated that Group 1 (GPA 3.50-4.00) had significantly more positive perceptions of student to student interactions and relationships than Group 4 (GPA less than 2.50) ($p = .007$). There was no difference found between other achievement groups. Table 17 lists the means and standard deviations for each SECI item for all four grade point average groups. This finding indicated that highest achieving students perceived the interactions between students differently than lowest achieving students. This finding also indicated that the difference was only for the *student to student* interactions and not the *student to teacher* or *teacher to student* interactions. This was a significant finding as schools address violence prevention as well as develop programs for improving the school community. Programs need to address student to student interactions. Programs need to be targeted at the population where the perception is different. Data analysis revealed that students with less than a 2.50 grade point average ranked every item of

Table 14

Student to Student Subscale across Achievement Levels

Group	GPA Range	<u>n</u>	<u>M</u>	<u>SD</u>
1	3.50-4.00	131	3.91	0.56
2	3.00-3.49	52	3.74	0.59
3	2.50-2.99	19	3.75	0.60
4	< 2.50	7	3.21	0.56
Total		209	3.83	0.59

Table 15

Student to Teacher Subscale across Achievement Levels

Group	GPA Range	<u>n</u>	<u>M</u>	<u>SD</u>
1	3.50-4.00	131	4.05	0.50
2	3.00-3.49	52	3.97	0.57
3	2.50-2.99	19	3.87	0.45
4	< 2.50	7	3.60	0.79
Total		209	4.00	0.53

Table 16

Teacher to Student Subscale across Achievement Levels

Group	GPA Range	<u>n</u>	<u>M</u>	<u>SD</u>
1	3.50-4.00	131	4.08	0.57
2	3.00-3.49	52	3.99	0.65
3	2.50-2.99	19	4.20	0.33
4	< 2.50	7	3.79	0.83
Total		209	4.06	0.59

Table 17

SECI Means and Standard Deviations across Grade Point Average Groups

Item	Group 1	Group 2	Group 3	Group 4
	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
	<u>SD</u>	<u>SD</u>	<u>SD</u>	<u>SD</u>
Student to Teacher Subscale				
1. Students' work shows effort.	4.14 0.64	4.25 0.71	3.79 0.79	4.00 0.82
2. Students follow teachers' directions.	4.18 0.70	4.08 0.76	3.89 0.81	3.43 0.98
3. Students complete assignments on time.	3.99 0.73	3.90 0.89	3.74 0.56	3.43 1.13
4. Students are respectful to teachers.	4.39 0.63	4.23 0.70	4.21 0.54	4.14 1.21
5. Students actively participate in class discussions.	3.85 0.83	4.00 0.77	3.89 0.94	3.43 1.13
6. Students pay attention during class.	4.03 0.76	3.88 0.76	3.79 0.92	3.57 1.40
7. Students accept responsibility for getting help when they need it.	4.01 0.83	3.90 1.07	4.11 0.66	3.43 0.98
8. Students let their teachers know when commitments cannot be met.	3.84 0.90	3.40 1.16	3.74 0.93	3.43 1.13
9. Teachers can trust students to behave appropriately in unsupervised situations.	4.05 0.94	4.08 0.79	3.68 0.89	3.57 1.13

Item	Group 1	Group 2	Group 3	Group 4
	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
	<u>SD</u>	<u>SD</u>	<u>SD</u>	<u>SD</u>
Student to Student Subscale				
10. Students feel free to discuss their ideas with their classmates.	4.16 0.86	4.02 0.94	3.72 1.18	3.43 0.98
11. Students are considerate of their classmates' feelings.	3.82 0.89	3.67 0.96	3.63 1.07	2.86 1.21
12. Students make new students feel welcome at this school.	4.36 0.78	4.31 0.83	4.32 0.82	3.86 1.46
13. Students make fun of classmates who are different from themselves.	3.68 1.09	3.33 1.26	3.05 1.31	3.00 1.29
14. Students go out of their way to help their classmates.	3.32 0.88	3.27 1.07	3.47 1.02	2.57 0.79
15. Students encourage their classmates when appropriate.	3.85 0.88	3.58 1.18	3.78 0.94	3.29 0.95
16. Without cheating, students share ideas, class notes, and other materials with their classmates.	4.11 0.78	4.12 0.98	4.16 0.69	3.71 1.25
17. When working in a group with their classmates, students do their fair share of the work.	3.81 0.98	3.92 0.90	4.11 0.81	3.57 0.98
18. Students treat their classmates with respect.	3.99 0.84	3.81 0.84	3.89 0.88	3.29 1.25
19. Students defend classmates who are being picked on by others.	3.38 0.97	3.37 1.21	3.21 1.18	2.86 0.90

Item	Group 1	Group 2	Group 3	Group 4
	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
	<u>SD</u>	<u>SD</u>	<u>SD</u>	<u>SD</u>
20. Students respect classmates' personal belongings.	3.96 0.86	3.75 1.03	4.16 0.83	3.14 1.35
21. Students are treated differently because of the way they dress.	3.67 1.21	3.33 1.37	3.58 1.35	2.43 1.62
22. Honor roll students are accepted by their classmates.	4.63 0.71	4.44 0.75	3.95 1.27	3.71 0.76
23. Students feel it is O.K. to walk away from a fight.	4.02 0.93	3.44 1.23	3.42 1.17	3.29 1.60
Teacher to Student Subscale				
24. Teachers are available to students outside of class time.	4.05 0.94	3.87 1.01	4.11 0.88	3.57 1.40
25. Teachers praise students for excellent work.	3.71 1.15	3.62 1.07	3.37 1.12	3.57 0.98
26. Teachers help students improve their study habits.	3.82 1.13	4.00 0.99	4.11 0.66	3.29 1.11
27. Teachers present more than one point of view.	3.96 0.89	4.06 0.92	4.47 0.61	3.86 0.90
28. Teachers treat all students with respect.	4.34 0.91	4.06 1.02	4.37 0.68	3.43 1.51

Item	Group 1	Group 2	Group 3	Group 4
	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
	<u>SD</u>	<u>SD</u>	<u>SD</u>	<u>SD</u>
29. Teachers encourage students to ask questions if they are appropriate.	4.33 0.87	4.27 0.91	4.42 0.61	4.43 0.98
30. Teachers give students the opportunity to practice what they learn.	4.31 0.88	4.15 0.87	4.63 0.60	4.29 0.76
31. Teachers are well prepared for their classes.	4.47 0.70	4.44 0.83	4.47 0.70	4.14 1.07
32. Teachers are positive role models for students.	4.29 0.70	4.08 0.96	4.26 0.45	3.57 1.27
33. Students and teachers cooperate with each other.	4.13 0.73	3.98 0.90	4.32 0.67	4.00 0.82
34. Teachers respect the cultures of all students.	4.81 0.50	4.50 0.87	4.89 0.32	4.14 1.46
35. Teachers' tests cover what was taught.	4.32 0.78	4.44 0.89	4.42 0.61	4.43 0.98
36. Teachers are available to all students on an equal basis.	4.12 0.85	3.96 0.91	4.37 0.68	3.86 0.69
37. Teachers help students with special needs.	4.44 0.76	4.08 0.97	4.53 0.51	3.57 1.27

Item	Group 1	Group 2	Group 3	Group 4
	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
	<u>SD</u>	<u>SD</u>	<u>SD</u>	<u>SD</u>
38. Teachers provide students with praise when appropriate.	3.88 1.04	3.87 0.82	4.00 1.00	4.14 0.90
39. Teachers return assignments in a reasonable amount of time.	3.86 0.97	3.85 1.11	4.21 0.91	3.43 0.79
40. Students who have questions about grades feel free to talk to their teachers.	3.98 0.99	3.98 1.09	4.26 0.73	3.71 1.50
41. Students feel comfortable seeking help from teachers outside of class time.	3.91 0.96	3.79 1.18	4.05 0.85	3.71 0.76
42. When school-related problems arise, students feel free to talk with teachers.	3.60 0.99	3.54 1.09	3.84 1.07	3.57 1.27
43. Students can trust teachers with personal information.	3.92 1.05	3.84 1.17	3.68 1.06	3.57 1.40
44. Teachers promote cooperation among students.	4.34 0.73	4.06 0.78	4.06 0.73	3.86 1.07
45. Course exams, projects, and papers are graded fairly.	4.40 0.73	4.23 0.90	4.63 0.50	4.43 0.79
46. Teachers follow through on reasonable requests made by students.	3.82 0.85	3.81 1.03	3.89 1.05	3.43 1.72

Item	Group 1	Group 2	Group 3	Group 4
	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
	<u>SD</u>	<u>SD</u>	<u>SD</u>	<u>SD</u>
47. Teachers allow students to choose topics for course projects or papers.	3.40 1.09	3.44 1.41	3.74 0.73	3.14 0.69
48. Teachers are attentive to students during meetings.	3.85 0.93	3.71 1.13	3.79 0.92	3.71 1.1.25
49. Teachers allow students to express their opinions even if they are different from the teachers'.	4.10 0.97	4.12 1.03	4.26 1.05	3.57 1.40

Note: The mean for numbers 13 and 21 were re-coded.

the *student to student* section of the SECI lower than students with a 3.50 to 4.0 grade point average did (see Table 17).

Although not statistically significant, it is noted that the mean scores for Group 4 (GPA less than 2.50) were lower than the other achievement groups for the *student to student*, *student to teacher* and *teacher to student* subscales (see Table 14, 15, and 16). Already by seventh grade certain students, with definable characteristics, viewed the interactions with students and teachers less favorably than others did. This view, however, was not statistically significant, at least not yet. This means that maybe intervention is not too late. As mentioned before, intervention needs to hit at the heart of the matter – the interaction between students.

Lower mean scores for student to student interactions. The mean score of the *student to student* subscale was lower than that of the *student to teacher* and *teacher to student* subscale in both the sixth and seventh grade. This was true across each interdisciplinary team as well as each grade level (see Table 18). Battistich, Solomon, Kim, Watson and Schaps (1995) researched student perceptions about community in 24 elementary schools across six school districts. They determined that student sense of community was low. Mean scores for the schools studied ranged from 2.56 to 3.29 on a 5.0-point likert scale. The overall mean of 2.95 was very close to the scale's midpoint. Although the overall mean score of this study ($M=3.83$) was higher than the Battistich study, student perceptions about their interactions with each other were still lower than their perceptions about student and teacher interactions.

Finding that *student to student* interactions were perceived less favorably than *student to teacher* and *teacher to student* interactions was important, but not

Table 18

Student to Student, Student to Teacher, Teacher to Student Subscale Comparisons
across Teams by Grade Level

Item	6A	7A	6B	7B	6C	7C	6	7
	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
	<u>SD</u>	<u>SD</u>	<u>SD</u>	<u>SD</u>	<u>SD</u>	<u>SD</u>	<u>SD</u>	<u>SD</u>
Student to Student	3.91	3.83	3.85	3.85	3.86	3.82	3.87	3.83
	0.55	0.58	0.56	0.56	0.58	0.61	0.56	0.59
Student to Teacher	4.06	3.96	4.04	4.02	4.08	4.01	4.06	4.00
	0.49	0.58	0.50	0.52	0.56	0.51	0.52	0.53
Teacher to Student	4.12	3.94	4.10	4.16	4.11	4.06	4.11	4.06
	0.54	0.62	0.60	0.50	0.59	0.61	0.58	0.59

surprising. Middle level children are stuck in the middle. They are halfway between childhood and adulthood. One-minute middle level children are abstract thinkers and the next they are concrete. Middle level children are constantly vacillating between sophisticated and unsophisticated (Campbell, 1992; Lewis, 1992; McKay, 1995; Nebraska Department of Education, 1997). The unpredictable nature of middle level students certainly impacted the community perceptions of the *student to student* subscale in this study.

Programs that are aimed at building relationships between teachers and students are important, but the need may differ depending upon the school. Focusing primarily on the relationship between the teacher and the student instead of between students could be a misuse of time. The only way to address the problems that exist between student to student relationships is to develop programs that promote tolerance, acceptance, and positive interactions between students. This focused attention can build community between students, which according to this study is where it is needed.

SECI items viewed differently by students. Differences were found between individual scale items within each grade level. Individual items with a scale score of less than 3.50 are recommended to receive special consideration by way of program development. Table 19 identifies SECI items with mean scores less than 3.50 in sixth grade while Table 20 identifies items with mean scores less than 3.50 in seventh grade. An example of this was item 14, which read, "Students go out of their way to help their classmates." In sixth grade the mean score for this item was 3.25 (see Table

Table 19

School Ethical Climate Index Means and Standard Deviations of Less than 3.50 in Sixth Grade

Item	<u>n</u>	<u>M</u>	<u>SD</u>
	6	6	6
Student to Student Subscale			
14. Students go out of their way to help their classmates.	208	3.25	0.94
19. Students defend classmates who are being picked on by others.	209	3.47	1.09

Table 20

**School Ethical Climate Index Means and Standard Deviations of Less than 3.50 in
Seventh Grade**

Item	<u>n</u>	<u>M</u>	<u>SD</u>
	7	7	7
Student to Student Subscale			
14. Students go out of their way to help their classmates.	209	3.30	0.94
19. Students defend classmates who are being picked on by others.	209	3.34	1.05
Teacher to Student Subscale			
47. Teachers allow students to choose topics for course projects or papers.	209	3.44	1.14

19), and in seventh grade the mean score was 3.29 (see Table 20). The likert scale indicated that a score of 3 corresponded to a ‘sometimes true’ interaction while a score of 4 corresponded to an ‘often true’ interaction. A score of 3.23 means students did not always or even often times perceive that students went out of their way to help each other. The interactions of students and teachers make up the community. Addressing SECI items with mean scores of less than 3.50 gives school personnel a chance to work on continuously improving the community. Working on identified weaknesses also means that programs can and should be developed to address specific behaviors and interactions. If students perceive that they do not go out of their way to help each other, then the adopted program should focus on developing this behavior. The descriptive statistical component to each SECI item allows the school to develop site-managed programs that hit at the exact nature of the problem.

Small effect size found between individual SECI items. There was a small effect size found between the ranking of individual scale items in the sixth and seventh grade (see Table 21). This means that there was little perceived difference in SECI items in sixth and seventh grades. Knowing this information is essential to establishing and improving community. Descriptive analysis can uncover differences in community perceptions in different grade-levels. This means that schools can determine what, if any, perceptions have changed for students as they get older. Educational programs can be devised to combat changes in perceptions so that a more positive community can be established. These data may also help uncover deep-rooted traditions. If a behavior or interaction occurs consistently over years, the

Table 21

School Ethical Climate Index Mean, Standard Deviation, and Effect Size by Grade Level

Item	<u>M</u>	<u>M</u>	<u>ES</u>
	<u>SD</u>	<u>SD</u>	
	6	7	
Student to Teacher Subscale			
1. Students' work shows effort.	4.05 0.68	4.13 0.68	0.12
2. Students follow teachers' directions.	4.26 0.74	4.11 0.75	0.20
3. Students complete assignments on time.	4.03 0.83	3.93 0.78	0.12
4. Students are respectful to teachers.	4.41 0.74	4.33 0.66	0.11
5. Students actively participate in class discussions.	3.90 0.90	3.87 0.84	0.03
6. Students pay attention during class.	4.01 0.81	3.96 0.80	0.06
7. Students accept responsibility for getting help when they need it.	4.20 0.86	3.97 0.89	0.26
8. Students let their teachers know when commitments cannot be met.	3.67 1.05	3.71 0.99	0.04

Item	<u>M</u>	<u>M</u>	<u>ES</u>
	<u>SD</u>	<u>SD</u>	
	6	7	
9. Teachers can trust students to behave appropriately in unsupervised situations.	4.01 1.00	4.00 0.91	0.01
Student to Student Subscale			
10. Students feel free to discuss their ideas with their classmates.	3.96 0.93	4.06 0.92	0.11
11. Students are considerate of their classmates' feelings.	3.92 0.91	3.74 0.95	0.19
12. Students make new students feel welcome at this school.	4.38 0.83	4.33 0.82	0.06
13. Students make fun of classmates who are different from themselves.	(3.80) 1.18	(3.51) 1.18	0.25
14. Students go out of their way to help their classmates.	3.25 0.94	3.30 0.94	0.05
15. Students encourage their classmates when appropriate.	3.73 1.00	3.76 0.97	0.03
16. Without cheating, students share ideas, class notes, and other materials with their classmates	3.91 0.99	4.11 0.84	0.22
17. When working in a group with their classmates, students do their fair share of the work.	3.95 0.90	3.86 0.94	0.10
18. Students treat their classmates with respect.	4.03 0.90	3.91 0.86	0.14

Item	<u>M</u>	<u>M</u>	<u>ES</u>
	<u>SD</u>	<u>SD</u>	
	6	7	
19. Students defend classmates who are being picked on by others.	3.47 1.09	3.34 1.05	0.12
20. Students respect classmates' personal belongings.	4.11 0.98	3.90 3.93	0.22
21. Students are treated differently because of the way they dress.	(3.63) 1.30	(3.54) 1.29	0.08
22. Honor roll students are accepted by their classmates.	4.22 0.97	4.49 0.82	0.31
23. Students feel it is O.K. to walk away from a fight.	3.86 1.07	3.79 1.09	0.06
Teacher to Student Subscale			
24. Teachers are available to students outside of class time.	4.19 0.90	4.00 0.97	0.20
25. Teachers praise students for excellent work.	3.72 1.18	3.65 1.12	0.06
26. Teachers help students improve their study habits.	4.05 1.01	3.88 1.06	0.17
27. Teachers present more than one point of view.	4.09 0.91	4.03 0.88	0.07
28. Teachers treat all students with respect.	4.39 0.92	4.24 0.96	0.16

Item	<u>M</u>	<u>M</u>	<u>ES</u>
	<u>SD</u>	<u>SD</u>	
	6	7	
29. Teachers encourage students to ask questions if they are appropriate.	4.43 0.87	4.33 0.86	0.12
30. Teachers give students the opportunity to practice what they learn.	4.27 0.92	4.30 0.86	0.03
31. Teachers are well prepared for their classes.	4.45 0.79	4.45 0.75	0.00
32. Teachers are positive role models for students.	4.25 0.85	4.21 0.78	0.05
33. Students and teachers cooperate with each other.	4.11 0.87	4.11 0.77	0.00
34. Teachers respect the cultures of all students.	4.67 0.70	4.72 0.67	0.07
35. Teachers' tests cover what was taught.	4.50 0.71	4.36 0.80	0.19
36. Teachers are available to all students on an equal basis.	4.11 0.84	4.10 0.85	0.01
37. Teachers help students with special needs.	4.41 0.87	4.33 0.84	0.09
38. Teachers provide students with praise when appropriate.	3.94 1.02	3.89 0.97	0.05

Item	<u>M</u>	<u>M</u>	<u>ES</u>
	<u>SD</u>	<u>SD</u>	
	6	7	
39. Teachers return assignments in a reasonable amount of time.	4.13 0.94	3.88 1.00	0.26
40. Students who have questions about grades feel free to talk to their teachers.	4.01 1.04	4.00 1.01	0.01
41. Students feel comfortable seeking help from teachers outside of class time.	3.95 0.99	3.89 1.00	0.06
42. When school-related problems arise, students feel free to talk with teachers.	3.56 1.12	3.61 1.03	0.05
43. Students can trust teachers with personal information.	3.78 1.17	3.87 1.09	0.08
44. Teachers promote cooperation among students.	4.28 0.80	4.23 0.76	0.06
45. Course exams, projects, and papers are graded fairly.	4.46 0.77	4.38 0.76	0.10
46. Teachers follow through on reasonable requests made by students.	3.78 0.91	3.81 0.94	0.03
47. Teachers allow students to choose topics for course projects or papers.	3.52 1.11	3.44 1.14	0.07
48. Teachers are attentive to students during meetings.	3.71 1.14	3.80 0.99	0.08

Item	<u>M</u>	<u>M</u>	<u>ES</u>
	<u>SD</u>	<u>SD</u>	
	6	7	
49. Teachers allow students to express their opinions even if they are different from the teachers'.	4.04 0.95	4.10 1.00	0.06

school should examine its policy and practice so students can best be served. A change in practice may ultimately lead to a better feeling about school for all students.

Conclusion and Recommendations

Previous research has determined that teaming makes a difference on student attendance, behavior, achievement and perceptions about community (Arhar, 1991; Cotton, 1982; Ernest, 1991; Gamsky, 1970; George & Oldaker, 1985-1968; Sinclair, 1980). Whether the size of the interdisciplinary team affects these same areas has yet to be determined. Hassler (1994) and Williams (1999) were able to prove that team size does affect achievement, but not attendance, behavior, or student self-concept. In the case of this research, evidence supporting team size and its impact on behavior, attendance, achievement, and perceptions about community could not be found.

Early in the middle level movement, the focus of research was on whether schools with interdisciplinary teams achieved better than schools that did not use teaming practices. This early research was inconclusive. However, through time, middle level researchers have been able to determine that teaming does in fact make a difference. Today, the focus of middle level research has changed. Researchers are focusing on better ways to team students so that academic and social achievement can continue to improve. Given time and refinement of research techniques, middle level practitioners may determine that team size does significantly impact student achievement, behavior, attendance, and perceptions about community. However, this refinement of research will take time, and any study that contributes to the body of research on teaming is important and essential.

Recommendations for Further Research

Further research is needed in the area of team size and its effect on student achievement. It is recommended that future researchers replicate a study on team size at a lower performing school. In general, the school in this study was high performing. Grade point average, rates of attendance, rates of behavior referrals, and perceptions about community all indicated that students in this school were high achievers. How does team size affect the perception of community at a lower achieving school? How does team size at a lower achieving school affect achievement, attendance and behavior? Research in this area will help practitioners draw conclusions on the importance of interdisciplinary team size. Research in this area will also help practitioners make best practice decisions based upon their own school's data.

Future researchers are also recommended to look at this same type of study through qualitative analysis. How do students on smaller teams view the school community when compared to students on a larger team? What are the perceptions of high and low achieving students with respect to community? What are the commonalities between these groups of students as well as the differences? Qualitative analysis may provide sensitivity to data collection not afforded by quantitative research. This sensitivity may help researchers determine that team size does have an impact on how students feel about school. Qualitative research may provide another piece to the research that is so important to the evolution of middle level education.

Regardless of team size, further research is needed in the area of student to student interactions. The research presented here indicated that *student to student*

interactions were always rated lower than *student to teacher* and *teacher to student* interactions. A study about the implementation of a student to student community development program might provide results that are beneficial to all school practitioners. Positive results of such a study may carry a tremendous impact on schools that are trying to improve their sense of community.

Practitioners are recommended to build programs that focus on improving *student to student* interactions for students with less than a 2.50 grade point average. This group of students had a significantly different perception about community than students with a grade point average greater than 3.50. Providing assistance to these students may change how they view the community of the school.

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Appendix A

SCHOOL ETHICAL CLIMATE INDEX
HOW TRUE IS EACH STATEMENT IN YOUR SCHOOL?

1 = Rarely or Never True
 2 = Seldom True
 3 = Sometimes True
 4 = Often True
 5 = Usually or Always True

STUDENT TO TEACHER SUBSCALE

1. Students' work shows effort.	1	2	3	4	5
2. Students follow teachers' directions.	1	2	3	4	5
3. Students complete assignments on time.	1	2	3	4	5
4. Students are respectful to teachers.	1	2	3	4	5
5. Students actively participate in class discussions.	1	2	3	4	5
6. Students pay attention during class.	1	2	3	4	5
7. Students accept responsibility for getting help when they need it.	1	2	3	4	5
8. Students let their teachers know when commitments cannot be met.	1	2	3	4	5
9. Teachers can trust students to behave appropriately in unsupervised situations.	1	2	3	4	5

STUDENT TO STUDENT SUBSCALE

10. Students feel free to discuss their ideas with their classmates.	1	2	3	4	5
11. Students are considerate of their classmates' feelings.	1	2	3	4	5
12. Students make new students feel welcome at this school.	1	2	3	4	5
13. Students make fun of classmates who are different from themselves.	1	2	3	4	5
14. Students go out of their way to help their classmates.	1	2	3	4	5
15. Students encourage their classmates when appropriate.	1	2	3	4	5
16. Without cheating, students share ideas, class notes, and other materials with their classmates.	1	2	3	4	5

HOW TRUE IS EACH STATEMENT IN YOUR SCHOOL?

1 = Rarely or Never True
 2 = Seldom True
 3 = Sometimes True
 4 = Often True
 5 = Usually or Always True

17. When working in a group with their classmates, students do their fair share of the work.	1	2	3	4	5
18. Students treat their classmates with respect.	1	2	3	4	5
19. Students defend classmates who are being picked on by others.	1	2	3	4	5
20. Students respect classmates' personal belongings.	1	2	3	4	5
21. Students are treated differently because of the way they dress.	1	2	3	4	5
22. Honor roll students are accepted by their classmates.	1	2	3	4	5
23. Students feel it is O.K. to walk away from a fight.	1	2	3	4	5

TEACHER TO STUDENT SUBSCALE

24. Teachers are available to students outside of class time.	1	2	3	4	5
25. Teachers praise students for excellent work.	1	2	3	4	5
26. Teachers help students improve their study habits.	1	2	3	4	5
27. Teachers present more than one point of view.	1	2	3	4	5
28. Teachers treat all students with respect.	1	2	3	4	5
29. Teachers encourage students to ask questions if they are appropriate.	1	2	3	4	5
30. Teachers give students the opportunity to practice what they learn.	1	2	3	4	5
31. Teachers are well-prepared for their classes.	1	2	3	4	5

HOW TRUE IS EACH STATEMENT IN YOUR SCHOOL?

1 = Rarely or Never True
 2 = Seldom True
 3 = Sometimes True
 4 = Often True
 5 = Usually or Always True

32. Teachers are positive role models for students.	1	2	3	4	5
33. Students and teachers cooperate with each other.	1	2	3	4	5
34. Teachers respect the cultures of all students.	1	2	3	4	5
35. Teachers' tests cover what was taught.	1	2	3	4	5
36. Teachers are available to all students on an equal basis.	1	2	3	4	5
37. Teachers help students with special needs.	1	2	3	4	5
38. Teachers provide students with praise when appropriate.	1	2	3	4	5
39. Teachers return assignments in a reasonable amount of time.	1	2	3	4	5
40. Students who have questions about grades feel free to talk to their teachers.	1	2	3	4	5
41. Students feel comfortable seeking help from teachers outside of class time.	1	2	3	4	5
42. When school-related problems arise, students feel free to talk with teachers.	1	2	3	4	5
43. Students can trust teachers with personal information.	1	2	3	4	5
44. Teachers promote cooperation among students.	1	2	3	4	5
45. Course exams, projects, and papers are graded fairly.	1	2	3	4	5
46. Teachers follow through on reasonable requests made by students.	1	2	3	4	5
47. Teachers allow students to choose topics for course projects or papers.	1	2	3	4	5
48. Teachers are attentive to students during meetings.	1	2	3	4	5
49. Teachers allow students to express their opinions even if they are different from the teachers'.	1	2	3	4	5

Appendix B

Dear Parents,

The Millard Public Schools has always believed in the pursuit of life long learning. As an Assistant Principal at Russell Middle School I have had an opportunity to continue this life long learning through the pursuit of my Doctorate in Educational Administration. At this time, I am ready to begin collecting baseline data for my dissertation.

The first part of the research will involve collecting data with respect to absence/tardy rates, grade point average, and behavior referral rates. This data will be collected during students' sixth grade year and then again at the conclusion of seventh grade. The second part of this research collection will involve students completing a survey about the school climate. Students will be asked to complete the survey in the spring of 2001 and then again in the spring of 2002.

Below are sample questions taken directly from the SECI:

- Students let their teachers know when commitments cannot be met.
- Students are considerate of their classmates' feelings.
- Teachers are available to students outside of class time.
- Teachers allow students to choose topics for course projects or papers.

According to Millard Public School Board Policy parents must be given the opportunity to opt out of the study. All information provided by students is confidential. Should you choose to remove your child from this research study, please return the enclosed waiver to Jim Sutfin, Russell Middle School by Thursday, February 8, 2001. Your help is greatly appreciated.

Sincerely yours,

James Sutfin
Assistant Principal

Encl.

Appendix C
Research Study
Participation Waiver

As the parent/guardian of _____, a sixth grade student at Russell Middle School, I hereby request that he/she be removed from the two-year study being conducted by Jim Sutfin as part of his dissertation research.

Student Name _____	Parent Name _____
Parent Signature _____	Date _____
Address _____	Phone (H/W) _____

If you choose to remove your student from this study please return this form to:

Russell Middle School Attention: Jim Sutfin 5304 S 172 nd St Omaha, NE 68135
--

Note: Please complete this form <u>only</u> if you would like your child removed from the study.
