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EFFECTS OF SAME-SEX AND COEDUCATIONAL PHYSICAL EDUCATION ON PERCEPTIONS OF SELF-CONFIDENCE AND CLASS ENVIRONMENT

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EFFECTS OF SAME-SEX AND COEDUCATIONAL PHYSICAL EDUCATION ON PERCEPTIONS OF SELF-CONFIDENCE AND CLASS ENVIRONMENT

By

Cathy Dale Lirgg

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ABSTRACT

EFFECTS OF SAME-SEX AND COEDUCATIONAL PHYSICAL EDUCATION ON PERCEPTIONS OF SELF-CONFIDENCE AND CLASS ENVIRONMENT

By

Cathy Dale Lirgg

The advent of Title IX in 1972 brought with it several important ramifications in the administration of sport and physical education. One outgrowth of Title IX was the appearance of coeducational physical education classes. However, the effects of coeducational physical education on students' self-perceptions have not been studied. Therefore, the purpose of this field experiment was to investigate the effects of attending either a coeducational or a same-sex physical education class during a basketball unit on several self-perception variables. Self-perception variables included perceived self-confidence, perceptions of the usefulness of learning basketball, perceptions of the gender-appropriateness of basketball, and perceptions of the environment. Subjects were 203 middle school students and 193 high school students from two middle schools and two high schools who participated in a 10-day basketball unit in physical education class. In each school, a male teacher and a female teacher each taught one coeducational class and one same-sex class. Classes were designated as either coed or same-sex; students in the coeducational classes were randomly assigned to either the male teacher or the female teacher. Results of 2 x 2 x 2 (Class Type x Gender x Grade) MANOVAs revealed that boys in coeducational classes perceived their classes more favorably than boys in same-sex classes. Boys in coeducational classes were more confident, perceived themselves to be better-behaved, more affiliative, and more involved than boys in same-sex classes. Girls

generally perceived their same-sex classes more favorably, perceiving better behavior, more affiliative behavior, more teacher support, and more student involvement than girls in coeducational classes. Given that Title IX mandates that physical education be coeducational, the impact of this law on boys and girls should be researched more carefully to examine how class type affects students not only in terms of performance, but also psychologically to identify the best physical education setting for students.

EFFECTS OF SAME-SEX AND COEDUCATIONAL PHYSICAL EDUCATION ON PERCEPTIONS OF SELF-CONFIDENCE AND CLASS ENVIRONMENT

By

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To Mom and Dad

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CHAPTER I

Introduction

Nature of the problem

The debate between coeducation and same-sex education has been long and passionate (Smith, 1984). Proponents of coeducation point to the more "normal" environment that coeducation provides (Dale, 1969, 1971, 1974; Schneider & Coutts, 1982). Coeducation critics counter this "normal environment" stance by arguing that it approximates the real world too closely; that male superiority can be realized in this "normal" setting, making coeducation less socially and academically desirable for girls (Mahoney, 1985; Sarah, Scott, & Spender, 1980).

Most of the debate over same-sex versus coeducational schools has occurred outside the United States in countries such as England and Australia. Schools in the United States have been predominately coeducational (98%) since the 1900's and same-sex education has seemed to be a dead issue (Diehl, 1986). Within these coeducational schools, however, some separate-sex classes (e.g., physical education, industrial arts, and home economics) were conducted amid relatively little controversy until the early 1970's.

With the advent of Title IX of the Educational Amendments in 1972, the same-sex / coeducation debate moved swiftly to the gymnasium. Because the primary purpose of Title IX was to eliminate overt forms of sex discrimination, its ramifications were largely felt within athletics. Prior to this time, underfunding, inferior equipment and facilities, and a general lack of programs had been the norm for girls' physical education. For example, in 1972 only 7% of the high school athletes were female (Miller Lite Report, 1985), and boys' athletic budgets were five times that of the girls (Coakley, 1986). With the passage

of Title IX, however, the gaps in budget and programs for boys and girls were narrowed. Besides monetary issues, the question of allowing girls to play on boys' teams when equal opportunity did not exist for girls, and vice versa, resulted in a reexamination of principles and attitudes previously unquestioned.

Physical educators were also immediately forced to handle the problems associated with coeducation. The specific wording of Title IX forbid any exclusion from participation or denial of benefits in athletics or physical education on the basis of sex. Therefore, one of its stipulations was that physical education classes were to be sex-integrated. Teachers found themselves untrained to deal with educating junior and senior high school boys and girls in a coeducational sport setting and unprepared to handle their own, as well as their students', gender-role stereotypes (Evans, Lopez, Duncan, & Evans, 1987; Griffin, 1984, 1985a). The fact that the mandate for coeducation had come from federal and state law, with little or no advise or consent from teachers, made the situation even more difficult.

Although school district compliance with Title IX was required by 1978, psuedo-compliance and mixed reactions to coeducational sports and physical education still abound. Not all school districts provide for complete coeducational physical education. Many schools schedule boys and girls into the same class but continue to segregate by sex within the class, with the boys taught by the male instructor and the girls taught by the female instructor. Participants of school sports, physical education, and recreation programs also have been divided in their opinions. For example, a survey of one high school showed 76% of the girls supported coeducational physical education, while only 52% of the boys preferred coeducational instruction (Mikkelson, 1979). However, those girls who were not good in sport favored same-sex instruction. The Miller Lite Report on Women in Sports (1985) found that 7 out of 10 women believed sports should be separated by sex, and 6 out of 10 women under 30 believed in the separation.

Some physical educators believe that coeducational physical education is an opportunity to eliminate or to test the limits of gender-role stereotypes, thus giving students

the opportunity to enjoy sport and recreational activities together (e.g., Griffin, 1981, 1984; Stamm, 1979). They contend that coeducational programs will succeed if there is commitment on the part of the staff and administration (Evans et al., 1987; Griffin, 1984), if there is ongoing inservice training for teachers (Griffin, 1981, 1984), or when teachers use a mastery approach to learning so that comparison with peers is lessened (Stamm, 1979).

Other physical educators recognize that coeducational sports and physical education can also be a frustrating experience, especially for lesser skilled students. Griffin (1981, 1984) suggested that some teachers, through the instructional strategies they use, actually promote the idea that sports are only for the highly skilled and aggressive minority. She cited non-instructional game play, an emphasis on competitive team sports, lack of action by the teacher during rude interactions or instances of inequitable participation, and lack of grouping by size or ability as reasons why coeducational programs fail.

The question of whether coeducational physical education classes actually succeed or fail may be difficult to answer. In the past, research has focused on performance outcomes as the dependent measure to answer this question; that is, same-sex classes and coeducational classes were compared by examining student performance on skill tests or achievement tests. This research has generally supported coeducation or at least has found little or no differences in the performances of students taught coeducationally and those taught in same-sex classes in sports such as basketball (Flanagan, 1980), badminton (Evaul, 1961; Tallman, 1970; Taylor, 1970), jogging (Vance, 1982), tennis (Brightwell, 1969), and volleyball (Koivala, 1978). However, these results may be due to the fact that little improvement in performance can be demonstrated in only one instructional unit.

A few researchers have looked beyond performance to the quality of students' interactions as a measure of the successfulness of coeducational physical education. For example, Griffin (1983) reported that in a gymnastics unit boys limited the girls' abilities to learn by hassling them, but girls did not limit the boys' opportunities. In an elementary

school game of newcombe, Solomons (1980) found, among others things, that girls received fewer passes than boys and passed up scoring opportunities to a greater degree than did boys, in spite of the fact that the girls and the boys were equally successful when they did try to score.

Recent research in other disciplines such as mathematics education has focused on other variables in measuring the success of coeducation such as confidence, the perception of math as a male domain, and the perception of the usefulness of math (Fennema & Sherman, 1977; Hilton & Berglund, 1974; Sherman, 1980, 1981). For example, Rowe (1988) demonstrated in a study in which he was able to randomly assign students into either same-sex or coeducational math classes that those in same-sex classes exhibited higher gains in confidence than those in coeducational classes and that confidence was a significant predictor of achievement, especially for those in same-sex classes. Additionally, confidence was a better predictor of enrollment in math classes than was math achievement.

Confidence has generally been viewed as a global construct indicating a belief in one's own abilities. Much of the research investigating "confidence" in math abilities has focused on confidence in one's own ability to perform well in math courses. Bandura (1986) uses the term "self-efficacy" to refer to people's judgments of their capabilities to organize and execute courses of action to attain certain performances. Therefore, self-efficacy is not one's perceptions of personal skills, but is a judgment of one's ability to use the skills one possesses. Although ability contributes to performance, perceived self-efficacy operates partially independently of those skills (Bandura, 1986).

According to Bandura (1977, 1986), self-efficacy judgments will have diverse effects in any achievement setting. Perceived self-efficacy influences one's choice of activities, how much effort one chooses to put into the activity, and the amount of persistence sustained by the individual in the face of failure. Individuals high in self-efficacy in a particular domain will choose activities that will contribute to the growth of competencies in

that domain. When difficulties arise, those high in self-efficacy will exert greater effort to overcome the difficulties than those who entertain self-doubts. Furthermore, highly efficacious individuals will maintain that effort longer, increasing probabilities for success, and thereby strengthening their beliefs.

Schunk (1984, 1985) asserts that self-efficacy is an important variable in understanding motivated learning. By this he means that highly efficacious students will be more motivated to acquire skills and knowledge rather than merely completing activities. This point is important because students usually enter an area of learning lacking the skills necessary to complete tasks or activities and must work to develop those skills. One who is high in self-efficacy may acquire those skills more easily and attain greater success than one who is low in self-efficacy.

Fennema and Peterson (1985) proposed a model of mathematics achievement that draws from Bandura's conception of self-efficacy. Specifically, this model was presented as an explanation for gender differences in mathematics. They hypothesized that in order to do mathematics, one must engage in autonomous learning behavior. They also hypothesized that boys participate in more autonomous learning behaviors than girls abd that this difference leads to achievement differences. Autonomous learning behavior includes working independently on high-level tasks, persisting at those tasks, and choosing to do and achieve success in those tasks. Whether or not one chooses to engage in autonomous learning behavior is a function of both one's internal motivational beliefs and external or societal influences. Internal motivational beliefs include confidence in one's ability to learn, sex-role orientation, the perceived usefulness of mathematics, and attributional style. In addition, external or societal forces can also influence internal beliefs. Although there can be many external factors that influence motivation or autonomous learning, Fennema and Peterson focused on teacher-pupil interactions and classroom activities in which boys and girls participate, as two of the most important external influences. These relationships among autonomous learning behavior, internal beliefs, and

external influences are illustrated in Figure 1.

One external factor in physical education that could mediate both internal motivational beliefs and autonomous learning behavior is the class context; e.g., whether girls and boys learn separately or together. Schunk (1984) hypothesized that educational practices are an important contextual influence on students' self-efficacy. Furthermore, boys and girls in the same context may perceive that environment differently, even if teacher behavior is similar toward both sexes (Brophy, 1985; Eccles & Blumenfeld, 1985). Boys and girls may view a coeducational class in physical education differently; that is, boys may find that coeducation fosters efficacious beliefs, while girls do not. In fact, Eccles and Blumenfeld (1985) suggest that some environments (possibly coeducation) may facilitate achievement in boys, while that same context may dampen or have little positive effect on girls' achievements. Thus, class environment could create differences in the autonomous learning behavior undertaken by boys and girls.

Coeducational physical education may also affect various age groups differentially. Elementary school children may not stereotype physical activity or sports as strictly as older children, although stereotypes are definitely present (Stein & Smithells, 1969). Also, sex differences in actual physical ability at this age are less apparent than at post pubertal ages. Middle school students are the most heterogeneous group with respect to maturity and abilities. While some boys may be physiologically closer to 8-year-olds, some girls may already be physically mature. The typical middle school student is very self-conscious, especially about physical characteristics, and acceptance by peers plays a dominant role in life (Stafford, 1982). By high-school age, males on the average, are superior to females in terms of physical strength and speed. Also, sex-role stereotypes will likely be well developed. In view of some of these developmental differences, the same class context in which children learn and use physical skills may not affect children similarly at each grade level or for each sex.

In summary, past research on same-sex and coeducational physical education has

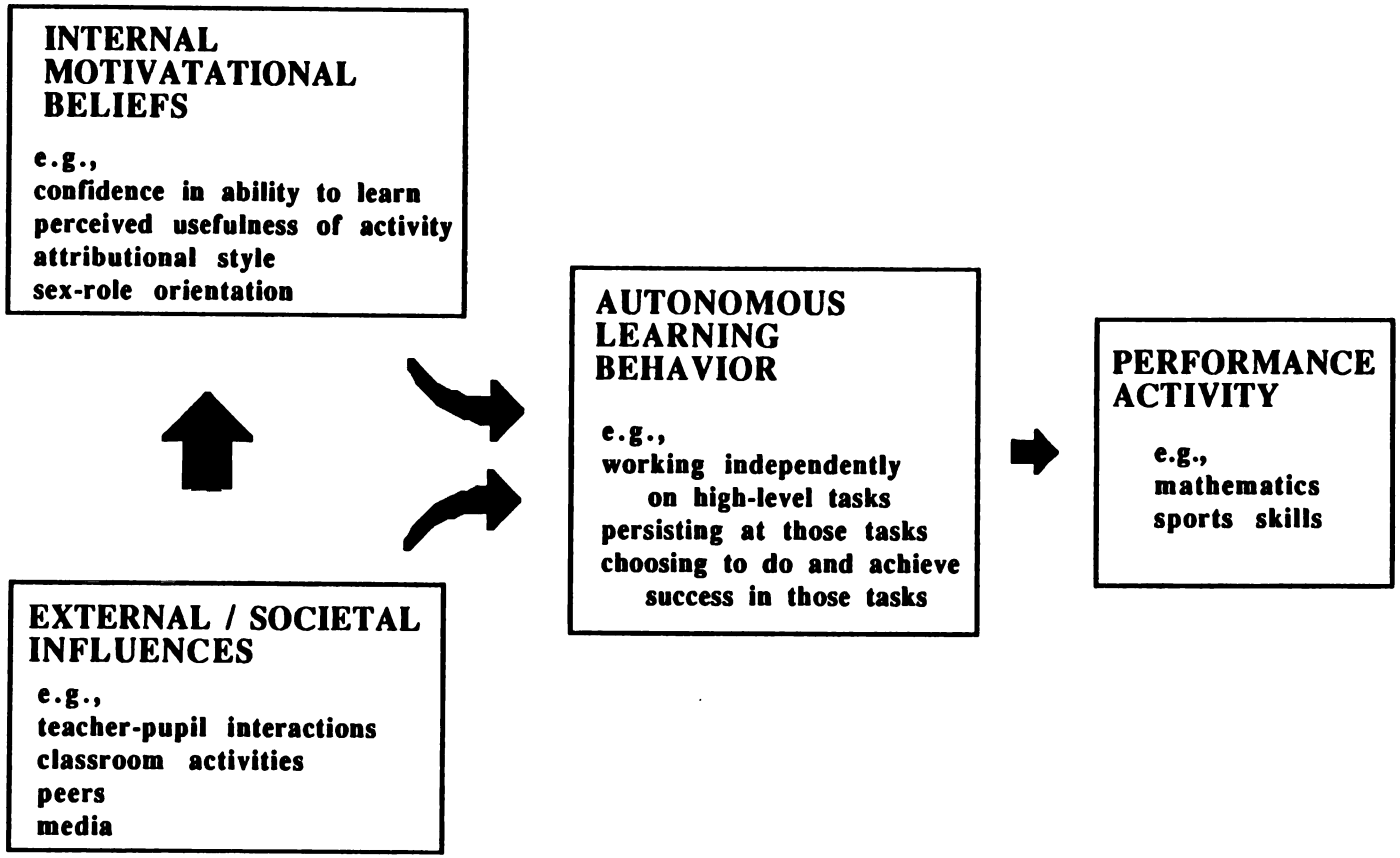


Figure 1. Adaptation of the Fennema and Peterson (1985) model that explains gender differences in the performance of an activity.

produced equivocal findings. In some research, performance on skill tests did not seem to be affected by coeducation. However, whether or not performance on skill tests is influenced by coeducation may not be as important a question as how coeducation affects students' perceptions of their abilities and other internal motivators. Some research has suggested that boys and girls experience different opportunites in coeducational physical education classes (e.g. Griffin, 1983, 1985a). These differences may contribute to greater or lesser confidence in learning. Drawing from the research in mathematics education, a student's confidence in mathematics, as well as perceptions of the usefulness of mathematics and how mathematics is seen as sex-appropriate, will contribute to the increased likelihood of continuing in advanced mathematics classes. Given that girls frequently display less confidence than boys in physical activity (Lirgg, in press), the type of class in which students learn physical skills may be a key to understanding a difference in boys' and girls' confidence levels. Because self-confidence ultimately affects performance, research investigating the effect of coeducation on students' confidence beliefs should also examine children at different age groups, as the instructional setting may affect students of various ages differentially.

Statement of the Problem

The major purpose of this field experiment was to investigate the effects of participating in either a coeducational or a same-sex physical education class during a basketball unit on several self-perception and environmental variables. These variables included perceived self-efficacy (or confidence in learning basketball), perceptions of the usefulness of basketball for recreational activities in later life, perceptions of basketball as a sex-typed activity, and perceptions of six aspects of class environment (student involvement, student affiliation, class competitiveness, teacher support, student behavior, and class organization). This research considered age differences by examining those

effects at two educational levels: (a) middle school, and (b) high school. Research in mathematics education has suggested that how one views an activity in terms of its usefulness and gender-appropriateness will influence confidence in learning that activity. Additionally, other educational research suggests that class environment may also influence confidence in learning. Therefore, although several self-perception variables were hypothesized to be influenced differentially by coeducational versus same-sex classes, a secondary purpose of this study was to determine the influence of these variables (usefulness of basketball, basketball as a sex-typed activity, and class environment variables) upon boys' and girls' self-confidence for learning basketball.

Hypotheses

The hypotheses are grouped into three categories for examination: (a) effects of class type (same-sex or coeducation) on self-perception variables, (b) effects of class type on perceived class environment differences between boys and girls, and (c) predictors of self-confidence.

Effects of Class Type on the Self-perception Variables

1. Boys at both grade levels will exhibit greater self-confidence for learning basketball, view basketball more strongly as a male activity, and perceive basketball as more useful to future recreational activities than will girls.

2. Girls in same-sex classes will exhibit greater self-confidence for learning basketball, perceive basketball as less of a male activity, and perceive basketball as more useful than will girls in coeducational classes, whereas boys in coeducational classes will exhibit higher confidence scores and perceive basketball as less of a masculine activity than will boys in same-sex classes.

Effects of Class Type on Perceptions of the Environment

3. Boys in same-sex classes will view their class environment as more competitive than boys in coeducational classes, whereas girls in coeducational classes will view their environment as more competitive than girls in same-sex classes.

4. Girls in coeducational classes will view their class environment as more competitive than would boys in coeducational classes.

5. Students in same-sex classes will perceive their classes as having better student behavior and class organization than will students in coeducational classes.

Predictors of Self-confidence

6. How useful one considers basketball to be, how masculine one considers basketball to be, and the amount of competitiveness in the class will be significant predictors of self-confidence for learning basketball.

Delimitations

This study is limited to middle class children attending public middle schools and high schools. Generalizations to younger and older grade levels and to activities other than basketball should not be made.

Definitions

Terms and operational definitions which apply to this study are listed below:

Affiliation and Helping Behavior Subscale -- a subscale adapted from the Classroom Environment Scale (Moos & Trickett, 1973) regarding the level of friendship students feel for each other, expressed by getting to know each other, helping each other, and enjoyment in working together.

Class Competitiveness Subscale -- a subscale adapted from the Classroom Environment Scale regarding how much students compete with each other for recognition, play hard, and how important it is to play well.

Class Environment Scale -- measured by an adaptation of the Classroom Environment Scale. This scale includes 6 subscales: (a) student involvement, (b) student affiliation, (c) teacher support, (d) class competition, (e) student behavior, and (f) class organization.

Class Organization Subscale -- a subscale adapted from the Classroon Environment Scale regarding the overall organization of assignments and class activities.

Coeducational Classes -- these classes are composed of both boys and girls and may be taught by a teacher of either sex.

Confidence in Learning Basketball Scale -- an adaptation of Fennema and Sherman's (1976) Confidence in Learning Mathematics Scale that measures confidence in one's ability to learn and perform well in basketball.

Gender-appropriateness of Basketball Scale -- adapted from Fennema and Sherman's (1976) Math as a Male Domain Scale. This scale measures the degree to which a student perceives basketball as a masculine sport; i.e., more appropriate for males.

Gender-specific Perceptions of the Environment -- six subscales adapted from the Classoom Environment Scale that measured perceptions of the environment as they impact only one's gender or the opposite gender.

High School Subjects -- high school subjects were selected only from those in Grade 9.

Middle School Subjects -- middle school subjects were comprised of students in Grade 6 and Grade 7.

Overall Perceptions of the Environment -- developed by the author to measure perceptions of the environment when students are taking into consideration all the students in the class (i.e., both genders).

Same-sex Classes -- these classes are composed of either all boys or all girls and are taught by a same-sex teacher.

Student Behavior Subscale - a subscale adapted from the Classroom Environment Scale regarding the emphasis on students behaving in an orderly and polite manner.

Student Involvement Subscale -- a subscale adapted from the Classroom Environment Scale regarding the extent to which students are attentive and interested in class activities and do additional work on their own.

Teacher Support Subscale -- a subscale adapted from the Classroom Environment Scale regarding the amount of help and friendship the teacher manifests toward students; how much the teacher talks openly with students, trusts them, and is interested in their ideas.

Usefulness of Basketball Scale -- adapted from Fennema and Sherman's (1976) Usefulness of Mathematics Scale. This scale measures the degree to which students feel that learning basketball will be useful for recreation activities in later life.

Basic Assumptions

1. Because teachers were given daily lesson plans and objectives, students in both coeducational and same-sex classes were presented basically the same material for each lesson.

2. Students answered the self-report measures honestly.

3. Because the classes to which students were randomly assigned were essentially new classes (i.e., not composed of the same students), past history of the classes was not a confounding variable.

Limitations

1. Teacher behavior could not be directly controlled and therefore may have varied from the same-sex class to the coeducational class.

2. There were some days when teachers were absent during the unit and substitutes conducted the class. In every instance of teacher absence, however, substitutes taught lessons from the lesson plans. Students were told to answer questionnaires relative to their own teacher when appropriate.

3. Coeducational classes were conducted in gymnasiums in which there was no divider. Consequently, students could observe the other class if they desired. From observations and teacher interviews; however, students appeared to ignore what was happening in the other class.

CHAPTER II

Review of Literature

The trend toward coeducational physical education in many ways paralleled the rise of coeducation in schools world-wide from the predominantly all-male or all-female schools of the past. The passion of the debate and the arguments used for and against these types of educational contexts in both school systems and physical education are quite similar. This chapter will (a) present an overview of the coeducational debate in education in general, (b) trace the history of physical education to its present coeducational context, (c) examine research from other disciplines that have experimented with a move back to same-sex classes, and (d) present Bandura's self-efficacy theory as a theoretical basis for decision-making in an educational context.

The Coeducational Debate

The formal education of females does not enjoy a long history. Although coeducation can be traced back as far as Plato (Kolesnik, 1969), the idea of educating girls or of educating boys and girls together has varied sharply across civilizations. For example, it was not uncommon for an upper class Roman female to be privately educated, although for the vast majority of Roman females education was considered unnecessary. However, a typical ancient Greek Athenian woman would find no opportunity at all for education available to her. During the early periods of Christianity, formal education existed in the form of monasteries or nunneries and were available to some boys and girls, but most boys received education which was informally provided by parents or pastors. Reading and

writing, however, were not thought to be particularly important for girls.

The Reformation in the 16th century saw the formation of the Grammar school, which was attended primarily by middle and upper class boys. A few Grammar schools for girls were established which were taught by women, as women at that time were prohibited from teaching boys. In certain areas, coeducational classes were taught by men, although these were the exceptions rather than the rule. Overall, however, the Reformation era had a significant impact on education for both boys and girls, with the roots of universal, compulsory education being planted in this period (Kolesnik, 1969).

Nevertheless, the idea of universal education has usually meant separate education for boys and girls. Most countries outside of the United States provided education in the form of separate schools and it was not until after the middle 1900's that there was a genuine move toward coeducation in Europe. Not surprisingly, most of the heated debate has centered there. Even so, although 98% of the schools in the United States have been coeducational since the early 1900's, some recent intellectual debate has taken place in this country as well. A summary of this world-wide controversy follows.

The Case for Coeducation

Instead of being dictated by educational concerns, many major policies in education frequently are economically, politically, and socially motivated (Astin, 1977; Lee & Bryk, 1986). The appearance of coeducation in Europe certainly followed such a pattern.

Economically, one school was cheaper than two, especially in rural settings where savings could be realized in funds, schools buildings, and materials (Greenough, 1970). Woody (1974) emphasized that coeducation was realistic, economically advantageous, and the best way of providing equal opportunities for girls. As an illustration of the strong influence of economic factors, Collins (1975) found that parents in Australia ranked the economic use of plant and facilities higher than psychological or academic reasons for coeducation.

Politically, proponents pointed to coeducation as the best way of providing equal opportunities for girls. Especially in the beginning years of the move toward coeducation, it was argued that if girls were educated with boys, they would have greater access to a decent education in order to become more independent and autonomous (Lavigueur, 1980). Also, it was argued that a greater variety of subjects could be offered to students in a coeducational environment, specifically higher level mathematics and science courses (Carpenter, 1985; Dale, 1974; Willis & Kenway, 1986). Willis and Kenway (1986) maintained that women who pushed for same-sex education were endorsing self-imposed "marginalization". They questioned how girls could be prepared for competition by removing them from it. Same-sex schools, they said, were not the solution because they did not focus on changing the attitudes of the boys. Moreover, organizing same-sex classes would not be sufficient to change the practices and values of teachers and administrators. Equal opportunity could be fully realized only in coeducational schools.

Another political factor in the argument for coeducation was that boys typically were the recipients of many of the advantages of this type of educational context (Sarah et al., 1980). Dale (1974) could find no evidence that coeducational classes had lower academic standards, a common complaint levied against coeducational schools. In fact, he said, for boys the academic standards probably increased. He offered the cautious summary that the progress of boys was probably increased in coeducational classes while that of the girls was not harmed. Fisher and Waetjen (1966) noted in their research that mixed classes realized higher achievement in English. This would not be surprising because girls usually received higher marks than boys in language, and the presence of girls in these classes could have upgraded the boys' achievement. Unfortunately, the same type of reciprocity for girls has not been found in coeducational math or science classes (Finn, 1980; Lee & Bryk, 1986; Rowe, 1988; Sherman, 1980; Vockell & Lobonc, 1980; Wood & Ferguson, 1974). The Australian Education Council summed up this political argument declaring rather succinctly, "The fact that it is the girls and not the boys who appear to be

disadvantaged in coeducational classes should not be a reason for delaying the taking of action" (cited in Carpenter & Hayden, 1987, p. 165).

Possibly the greatest push toward coeducation was socially motivated, as exemplified by the following quote: "The case for coeducation is built upon the conviction that the task of education is the development of social human beings dedicated to constructive social purposes..." (Hyde, 1971, p. 24). Dale (1969, 1971, 1974) consistently pointed to coeducational contexts as the more natural environment in which to prepare adolescents to take their place in a society that included both men and women. He claimed that the average coeducational community was happier for both staff and students. Furthermore, coeducation more closely approximated the real world of competition between males and females.

Nowhere did the social argument for coeducation loom larger than in the United States. While coeducation was a much newer concept in other countries, Americans generally regarded coeducation as natural, normal, and inevitable. In fact, some felt that education in the United States had as its primary developmental task, the nurturing of positive social relations (Powell & Powell, 1983). The absence of either sex would be unthinkable. Because it has been viewed as a "natural" educational context, only recently have researchers strongly questioned coeducation in America (e.g., Hawley, 1991; Lee & Bryk, 1986; Lee & Marks, 1990).

Specific research that has supported coeducation has focused on academic, social, and psychological advantages. Dale (1969, 1974) meticulously noted that the social and affective advantages of coeducation were not at the expense of academics. He found that in coeducational schools, boys had increased interest in math and science, and girls in language and literacy. Moreover, he concluded that anxiety was lower for boys and girls in coeducational schools than in same-sex schools, and that neuroticism was lower for boys. Boys attending coeducational grammar schools had higher levels of overall achievement (especially mathematics achievement), although this finding was not true of girls.

Generally, the academic advantages seemed to be weighted more heavily in favor of the boys.

A Canadian study by Schneider and Coutts (1982) found that coeducational schools were perceived by students as being more gregarious, group-centered, friendly, enjoyable, tolerant of non-compliance, spontaneous, and conducive to self-confidence and self-respect than were same-sex schools. They also found no support for the premise that coeducational schools placed less emphasis on scholarship and achievement. Payne and Newton (1990) found that both Barbadian teachers and students saw coeducation as advantageous in preparing students for future occupational and interpersonal roles, with male students expressing more positive views on coeducation than did females. Feather (1974) found that boys in coeducational schools were more satisfied with their classmates and teachers than were boys in same-sex schools. Harris (1986) reported that college students indicated a preference for coeducational high schools, especially if they had attended coeducational high schools. Lastly, Jones and Thompson (1981) noted that the conduct of boys was better in coeducational classes than in same-sex ones.

Marsh, Smith, Marsh, and Owens (1988) were able to monitor the progress of students during the transition years of the reorganization of two neighborhood same-sex high schools into one coeducational school and noted an increase in student self-concept from pre-transition to post-transition. However, there was a small decrease in self-concept for students who attended the coeducational high school only during the transition year. They also concluded that the benefits of coeducation to self-concept were not at the expense of academic achievement. In addition, they reported that previously existing sex differences were unaffected by the transition.

The Case for Same-sex Education

As adamant as the supporters of coeducation appeared, the proponents of same-sex education were equally, if not more, passionate. Proponents of same-sex education have

typically questioned the effect of coeducation on girls, citing academic, social, and psychological disadvantages. For example, Spender (1982) asserted that, in the United Kingdom, coeducational institutions are nothing more than boys' schools with girls present. Mahoney (1985) concluded her book "Schools for the Boys" by arguing that "coeducation, as things stand, is not more socially desirable for girls because it is more normal. Rather, because it is more normal it is, for girls, highly undesirable" (p.93). Sarah et al. (1980) saw coeducation as too much of an approximation of the real world, where male superiority could be realized in this "normal" setting. They also pointed out that same-sex education has not always been viewed as undesirable, that coeducation has been a relatively recent phenomenon. Deem (1986) commented that the move to coeducational schools may not have hindered girls' achievements, but it certainly has not improved them. Coleman (1961), in his seminal work investigating the adolescent subculture, suggested that coeducation may be inimical to both academic achievement and social adjustment, a claim which spurred research that has provided equivocal results (e.g., Dale, 1974; Feather, 1974; Jones, Shallcrass, & Dennis, 1972; Marsh, Owens, Myers, & Smith, 1989; Schneider & Coutts, 1982).

Some researchers have been concerned about girls being overshadowed by boys if they are educated together. McRobbie (1980) contended that if girls were more involved with all-girl subcultures, they might gain some much-needed collective confidence. Therefore, she urged the creation of same-sex facilities and programs for girls. Powell and Powell (1983) noted that as girls grow up they learn to give up certain attitudes toward learning such as questioning, challenging, and risk-taking as well as leadership positions. Taylor (1989) also felt that collectivity among girls needed to be fostered, and recognized the importance of organizing time for critical reflection in all-girl groups.

Research has found same-sex classes for boys and girls to have less distractions, freedom to focus intellectual energy, improved working conditions, a decrease in student attention-demanding behavior, fewer discipline problems, and greater time-on-task

(Kernkamp & Price, 1971; Lyles, 1966; Powell & Powell, 1983; Rowe, 1988; Trickett, Castro, Trickett, & Schaffner, 1982). Girls and boys in same-sex schools have been found to view themselves as better problem solvers and as having greater confidence and self-esteem than those in coeducational schools (Cairns, 1990; Fisher & Waetjin, 1966; Lyles, 1966). Same-sex schools have also been found to foster greater competition among students than coeducational schools (Trickett et al., 1982). For proponents of all-female classes, this type of competition is desirable; interestingly, competition with boys, such as that found in coeducational schools, is not viewed as desirable. Furthermore, some research has linked female fear of success with coeducation, competition with males, and male dominance in certain academic areas (Horner, 1972; Janda, O'Grady, & Capps, 1978; Winchel, Fenner, & Shaver, 1974).

Same-sex students have been purported to have a higher academic attitude. Lee and Bryk (1986) found consistent and positive effects of same-sex education on students' attitudes toward academics, especially for girls. Carpenter (1985) also found that girls in same-sex schools had higher academic self-concepts. Jones et al. (1972) found that same-sex schools fostered a more academic environment than did coeducational schools and noted that boys and girls from same-sex schools ranked scholarship higher than did their coeducational counterparts. Hawley (1991) recently extolled the praises of all-boy schools citing evidence of a higher striving for achievement among the boys than is normally seen in a typical school. Therefore, while proponents of coeducation have highlighted the fact that actual achievement does not appear to suffer when students are educated together, and have shown that boys' achievements may increase, proponents of same-sex education have uncovered differences between coeducationally and same-sex educated students in perceptions and attitudes about achievement. This topic will be explored later in the chapter.

Charting the Course Toward Coeducational Physical Education in America

The brief history of coeducational physical education in some ways parallels that of the recent formation of coeducational school systems outside the United States. As same-sex schools were the norm in European countries, so too were segregated physical education classes in America, existing peacefully amid school systems where boys and girls were naturally educated together. Just as a strong movement toward coeducation in Europe shook an entire educational system, physical education would find its previous gymnasium arrangement rudely interrupted by the passage of Title IX in 1972.

Pre-Title IX Physical Education

Early physical education in the United States (pre-1900) had its roots in medicine which generated a concern for fitness, efficiency, and health rather than social motives (Ziegler, 1988). Before the turn of the century, most physical education programs consisted of several different types of gymnastics training, adapted from types of European gymnastics, and were available to males and females. German and Swedish systems of gymnastics were very popular. While the German system featured vaulting horses, rope climbing, and parallel bars, the Swedish system featured light exercise, flexibility, and grace of movement. In the mid 1800's, Dio Lewis formulated his own system of gymnastics that focused on the development of the upper body and which could be applicable to men, women, and children (Freeman, 1977).

Two changes occurred in physical education after the turn of the century. The first was the introduction of various sports into the curriculum. The entry of sport was partly due to the problems that out-of-school sports had created for the schools and partly because of the widespread interest in sport among students (Freeman, 1977). Sports in the curriculum, especially basketball, were just as popular among girls as they were among

boys (Kennard, 1977).

A second change was a move away from the medical prescription of physical education. The "progressive movement" in education was led by Thomas Dewey and his concept of teaching the whole child, both mentally and physically, led to a general shift in the aim of physical education away from a health-centered program. His views of the school as a social institution also led physical educators to focus on the social values of the discipline (Freeman, 1977). With this philosophy, the inclusion of various sports within the curriculum fit nicely.

During this time, women's physical education developed in ways similar to that of the men. But, although sport was a major ingredient in both men's and women's curricula, the women developed their own versions of the games, such as divided courts and shortened games. Women physical educators were also leery of the problems of competition that had developed in some of the men's programs. Therefore, after an initial period of embracing sport, opportunities for formal competition among women were curtailed, although sport remained an important part of the curriculum (Kennard, 1977; Boutilier & SanGiovanni, 1983). Early in the century, women also developed dance and, later, movement education, as part of their curriculum. Men's programs, while focusing on sport, also saw a rise in the popularity of dance, particularly folk dancing early in the century (Freeman, 1977).

The World Wars had profound effects on physical education. During World War I, military drilling replaced the regular curriculum. The nation was shocked to find so many people unfit for military duty and directed money not into an improved sports and games curriculum, but into one which featured military drills and calisthenics. However, the Depression era found physical education being dropped in many schools as it was seen as a nonessential subject (Zeigler, 1988).

After World War II, the physical education curriculum again emphasized physical fitness. This trend was aided somewhat by President Dwight Eisenhower's Council on Youth Fitness and received additional momentum when President John Kennedy

established the President's Council on Physical Fitness. The Space Age, however, also brought with it the tendency to view the mind and the body as separate, with the emphasis placed on educating students more strongly in science and mathematics than ever before (Freeman, 1977). At the end of the 1960's, the general school systems were allowing students to choose their courses from a wider selection to give students not only more selection, but also greater autonomy. Physical education, it was felt, should also be a choice activity for students. The result was that many required physical education programs disappeared during this time.

In the pre-Title IX period, men's and women's programs contained both similarities and dissimilarities. While there was some similarity between the two in curriculum in the early years of physcial education in the schools, the two programs gradually emphasized different activities and had different expectation and performance levels for each gender (Geadelmann, 1981). Physical education could be characterized by a polarity of gender roles. There were women's programs and there were men's programs, each separately administered. For example, women's physical education and athletics were both developed within an educational context; men's athletics and men's physical education were clearly separate (Kennard, 1977). The difference in budgets and facilities between boys and girls in both sport and physical education widened as the years went on (Boutilier & SanGiovanni, 1983). Because of the gap in practice and philosophies between men's and women's programs, there was little, if any, opportunity for coeducational physical education except in the elementary schools. Although Mabel Lee (1978) documented an "interesting development" that arose in the 1930's - co-recreation, coeducational physical education is not mentioned in the history books.

Legal Implications of Title IX

Perhaps nowhere in the history of physical education has there been change that has caused as much controversy as Title IX. This act, formally called Title IX of the Education

Amendments of 1972, sought to eliminate sex discrimination among students and had important implications for physical education. It stated:

> *"No person in the United States shall, on the basis of sex, be excluded from participation in, or be denied the benefits of, or be subjected to discrimination under any educational program or activity receiving federal financial assistance."*

Schools were forced to examine, among other things, their instructional opportunities, intramural and interscholastic programs, hiring practices, budgets, and use of facilities. In addition, this law prohibited the offering of single-sex courses and programs, such as all-girl home economics, all-boy industrial arts, and girls' and boys' physical education (Dunkle & Sandler, 1975).

Under the provisions of Title IX, physical education classes were to be available to all students, allowing both boys and girls the opportunity to participate in all physical education activities. Classes in which contact sports were taught (boxing, wrestling, ice hockey, football, basketball, and rugby) could be segregated for class competition, but had to be integrated for instruction. Either male or female teachers could teach the classes, provided some provision was made regarding supervision of the locker rooms. Locker rooms and facilities were to be similar for both boys and girls. Title IX also stipulated that standards of individual performance (i.e., grading policies) should be developed and applied without regard to sex. Many of the other stipulations of Title IX concerned athletics, but those are beyond the scope of this chapter. In short, what was once separate and unequal was now integrated for the purposes of equality.

Debate over Coeducation in Physical Education

Although school district compliance with Title IX was mandated to take effect by 1978, pseudo-compliance to coeducational physical education still exists today.

Not all school districts provide for complete coeducational physical education. Many schools schedule boys and girls into the same class, but continue to segregate by sex within the class, with the boys being taught by the male instructor and the girls taught by the female instructor. Some schools allow their students to choose between a coeducational class or a same-sex class. Additionally, there has been some movement totally away from coeducational physical education because schools believed that Title IX was no longer monitored and therefore not important (Reid, 1985).

Thus, the road to compliance with Title IX has not been smooth. When Title IX first came into effect, there was much confusion about what the law stipulated (Arnold, 1977; Cole, 1976; Hogan, 1977). Many educators also resented the fact that there had been federal intervention without local and state input (Cole, 1976). Some teachers immediately found themselves untrained to handle teaching not only the opposite sex, but teaching a class in which both boys and girls were participating together. They felt unprepared to handle their own, as well as their students', gender-role stereotypes (Evans et al., 1987; Griffin, 1984, 1985a; Reid, 1985).

The forum had been opened for debate. Some physical educators pointed to coeducation as a prime opportunity to test the limits of or, ideally, to eliminate gender-role stereotypes, thus giving students the chance to learn and enjoy recreational activities together (Griffin, 1984; Stamm, 1979). In cases where participant size and strength inequalities might exist, it was argued that rules could be altered for fairness (Griffin, 1985b; Hoppe, 1987). Of crucial importance for success, though, would be a commitment on the part of the administration and staff, as well as on-going inservice programming for teachers (Evans et al., 1987; Griffin, 1984). Also, Stamm (1979) stressed the use of a mastery approach toward learning so that comparisons with peers would not be emphasized.

At the other end of the spectrum was the observation that girls were impeding the level of skill development of boys because the instruction had to be geared down, or that girls were reluctant to participate (Tobin, 1980). Coeducational physical education could too easily become non-instructional game play with no action taken by the teacher for inequitable participation or rude interactions (Griffin, 1984). Griffin (1984) commented that "at worst, coed sport is a frustrating experience and a confirmation that sport is only for the highly skilled or aggressive minority" (p. 37). While grouping by ability or size was proposed as one way that coeducational programs could be made fairer, this practice was subsequently attacked as de facto segregation, with the possibility that the boys would qualify for one group and the girls for another (Solomons, 1980). Even changing rules for fairness (e.g., a girl must hit the ball at least one time before it is sent over the net) was seen as a questionable tactic, especially if the rule was stated in a way that singled out one gender (Griffin, 1985b). Because boys in Grades 7-12 generally exceeded girls on most tasks of running speed, jumping ability, throwing, and strength (Hall & Lee, 1984), it was felt that injuries would be more common. Of course, the argument that having boys and girls in the same physical education class would lead to problems due to social distractions arose as well (Griffin, 1985b).

The question of whether coeducational physical education classes actually are good or bad for students may be difficult to answer. In the past, research has focused on performance outcomes as the dependent measure to answer this question; students in coeducational and same-sex physical education classes have been compared on skill tests or achievement tests. Most of this research has shown little or no differences between the two types of classes in such activities as basketball (Flanagan, 1980), badminton (Evaul, 1961; Tallman, 1970; Taylor, 1970), jogging (Vance, 1982), tennis (Brightwell, 1969), and volleyball (Koivala, 1982). However, these results may be due to the fact that little improvement in skill

can be demonstrated in one instructional unit.

Only a small amount of research has been conducted at the junior or senior high school levels. Neal (1984) found that there was no significant difference between coeducational and same-sex groups in the performance of a novel task - the stabilometer - by junior high students. In another study, ninth graders, participating in an 8-week jogging unit, made greater cardiorespiratory gains on the Harvard Step Test in coeducational classes than in same-sex classes. However, this gain was greater for boys than it was for girls. At the high school level, Flanagan (1980) found that there was no difference between coeducation students and same-sex students in the learning of offensive basketball skills. Finally, Musgrove (1986), in a study during units of volleyball and table tennis, noted that while same-sex classes provided more on-task time, coeducational classes provided more motor-appropriate time, indicating more active participation.

Several less recent studies have examined coeducational and same-sex classes at the college level. Tallman (1970) found no significant skill differences between men and women in badminton and archery classes. Other studies utilizing badminton as the activity have also produced non-significant results (Bracken, 1964; Taylor, 1970). However, Evaul (1961) found that women in a coeducational badminton class had higher skill test scores than women in a same-sex class, but that men scored better in the same-sex class. In another study, Brightwell (1969), while noting that both men and women significantly improved their tennis performance, found no differences due to class type. As can readliy be seen, the results of these studies show no clear pattern of results.

Some researchers have simply asked subjects about their participation preferences. One recent large-scale study of 7,000 women was concerned, among other things, about the attitudes of women toward coed sports (Miller Lite, 1985). This study showed that, overall, 7 out of 10 women agreed or strongly agreed that

women's sports should be kept separate from men's sports. However, younger women were somewhat less likely than older women to agree with that premise. Sixty-three percent of the women under 30 agreed that women's programs should be kept separate from men's compared to 71% of women 31-38 and 76% of women 39 and older. Even so, 80% indicated that they preferred to play sports with others of the same skill level, regardless of sex. About half of the respondents, 52%, indicated a general willingness to engage in sport with members of the opposite sex. Aerobics, calisthenics, jogging, and softball were popular activities that were preferred by the women in a same-sex setting. This study also noted that while coed sport is becoming more commonplace, the women believed that the major obstacle was an apparent male discomfort with women as successful athletes.

Other researchers have also asked subjects about their instructional preferences. A survey in one high school showed that 76% of the girls and 52% of the boys supported coeducational physical education classes (Mikkelson, 1979). However, those girls who were not good in sport favored same-sex instruction. Taylor (1970) found a decided preference among the college women in her study toward coeducational physical education classes, but found that men were divided on this issue.

A few researchers have looked beyond performance and preferences to the quality of students' interactions as a measure of the successfulness of coeducational physical education. Griffin (1983) investigated participation patterns in a coeducational gymnastics unit and found that boys and girls participated seriously in gymnastics only in events that they perceived as gender-appropriate (e.g., balance beam for girls and still rings for boys). She also noted that boys limited girls' opportunities to learn by hassling them. However, girls did not limit boys' opportunities. Lever (1976) noted that on playgrounds, boys controlled 10 times as

much space as girls and invaded girls' games and scenes of play more often than girls invaded the boys'. Griffin (1985a) found through interviews that teachers' gender-role stereotypes appeared, even when they were sincerely trying to be fair. One teacher explained that she sex-segregated her coed class in basketball because she felt that the girls were not skillful in handling the ball; consequently, they were not getting to handle the ball and therefore could not learn.

Solomons (1980) conducted an extensive study that examined both high and low ability boys and girls in an elementary physical education unit as well as teacher feedback to those students. In a unit of newcombe, she found that, in general, girls had no contact with the ball other than to serve; therefore, they had relatively few decisions on whether to pass or try to score. Overall, the girls received only about one-third as many passes as the boys. Even girls who were successful in their tries to score did not continue to receive passes, while boys who failed in their attempts were still supplied with opportunities to pass and score. Both the girls and the boys perceived the boys as more highly skilled, even when actual performance did not support this assumption.

A second experiment involved a competitive throwing and catching game that guided the participants into passing to teammates perceived as high in ability (Solomons, 1980). Findings showed that boys of high ability were more active in class and received more passes than girls of high ability, while girls with high ability gave away twice as many passes rather than try to score than did boys of high ability. Boys of high-ability encouraged and helped low-ability boys but girls did not receive this encouragement. However, very low-ability boys were the most viciously attacked verbally, especially by the girls.

In regard to teacher feedback, Solomons (1980) also noticed gender differences. Teachers would provide extra practice for low-ability boys but not for low-ability girls. Girls were congratulated for doing something not nearly as well

as a boy was expected to do. Moreover, when a girl performed poorly, it was ignored or patronized (e.g., "nice try"); boys who were performing poorly were criticized and corrected. Solomons noted, however, that one teacher who did not follow this procedure with the girls obtained better results. Overall, Solomons concluded that those who were already skilled seemed to benefit more from coeducational classes.

Research has shown that boys are more likely to be put into a high-ability group than girls, with girls being misassigned more often than boys (Hallinan & Sorensen, 1987). Martinek and Johnson (1979) found that physical education teachers approached high physical achievers more often, giving them more opportunity to interact with the teacher. Teachers were more accepting of ideas from high-physical ability students than low-physical ability students and used those ideas more frequently. High-physical ability students were also given more precise and supportive encouragement. If boys are more often classified as high in physical ability, these findings provide serious implications for ability grouping in coeducational physical education classes.

Research from Other Disciplines

Researchers in some subject areas have been concerned that not only do girls exhibit lower performances in their classes, but also that girls do not seem to be enrolling in higher level classes. Intuitively, the second worry (that girls are not enrolling in advanced classes) should have an impact on performance differences between boys and girls. Two subject areas that have explored reasons for these differences and for why girls may less frequently elect higher level classes are science and mathematics education. Research from these disciplines, especially research examining coeducational and same-sex classes, is examined next.

Science Education

There is much evidence to support the assertion that females underachieve in science in relation to males (Bateson & Parsons-Chatman, 1989). In the United States, Sweden, and England, males have more positive attitudes toward science (Finn, 1980), with differences in interest starting to appear by the seventh or eighth grade (Hardin & Dede, 1975). Preferences for science have been found to be related to success in science (Peterson & Carlson, 1979), which may explain some of the achievement differences.

Another explanation for females underachieving in science has focused on teacher expectancies. It is possible that teachers expect boys to perform better in science and this expectation serves as a pygmalian effect for both boys and girls, with boys subsequently performing better (Omerod, 1975; Rowell, 1971). A third explanation, related to the second, is that girls see science as a male-oriented subject and therefore do not strive to achieve in science by electing not to take science courses, especially the physical science courses (Vockell & Lobonc, 1980). A fourth, and similarly related, explanation is that coeducational science courses may foster the sex-typed belief that science is only for boys. If boys in coeducational science classes are more involved in class than girls or if there are more boys in the class than girls, both boys and girls may conclude that scinece is masculine or that it is more appropriate for boys to learn, especially if the teacher is male.

Research generally supports the position that girls in same-sex classes or schools will perform better in science than girls in coeducational settings. Lee and Bryk (1986) found that attendance at a girls' school increased science achievement of girls by approximately one year. Finn (1980) noticed a deceleration by English coeducational girls in science and an acceleration by English girls in same-sex schools. Hamilton (1985) found that both boys and girls in same-sex Jamaican schools showed greater achievement in science than those in coeducational schools.

She also found that girls in same-sex classes took more science subjects than girls in coeducational classes. One of the purported advantages of coeducational schools was that more science courses could be offered. However, even when more courses were available, compared to girls in same-sex schools, fewer coeducational girls seemed to be taking advantage of them (Branson & Miller, 1979; Carpenter, 1985; Hamilton, 1985). This contradiction has been explored and the results point somewhat to girls sex-typing science as a masculine subject.

Some researchers have found that girls in coeducational classes viewed science as more masculine than those in all-female classes (Omerod, 1975; Vockell & Lobonc, 1980). Vockell and Lobonc (1980) reasoned that because there is an over-representation of males in the physical sciences, girls who study science may be perceived as "deviant." If girls indeed perceive themselves as a "deviant" minority, their performance and preference for science may be reduced, especially in coeducational classes where there would be direct competition and comparison with males, leading the girls to not try as hard as the boys. Therefore, Vockell and Lobonc thought that by placing girls and boys together in the same class, rather than decreasing the stereotype of science as being male-oriented, the opposite would actually occur; there would be more stereotyping of science as masculine in coeducational classes, a view shared by Wood and Ferguson (1974).

At same-sex schools, students were more likely to have same-sex teachers. Students, especially girls, who have same-sex teacher models were more likely to have a greater commitment toward a career in science (Vockell & Lobonc, 1980). Finn (1980), likewise, pointed to the importance of successful female teachers and peers in facilitating learning in science. Female science teachers should be less likely to convey the feeling that science is only for boys or that boys should do better in science.

Mathematics Education

Research in math education has followed similar research paths as that taken by science education. As in science, girls are seen as less-achieving in mathematics (Heller & Parsons, 1981; Maccoby & Jacklin, 1974; Sherman, 1980) and less willing to take higher level math courses (Sherman & Fennema, 1977). In fact, Maccoby and Jacklin (1974) contended that mathematics ability was one of the strongest supported sex differences in the literature. However, other research has since contradicted this assertion. Girls in elementary school have been found to display mathematics achievement equal to that of elementary school boys (Hallinan & Sorensen, 1987; Hilton & Berglund, 1974; Meece, Parsons, Kaczala, Goff, & Futterman, 1982). Likewise, girls who had similar backgrounds in mathematics as boys also did not display lower achievement (Fennema & Sherman, 1977), although Sherman (1982a) later presented evidence that even with similar mathematics backgrounds, girls may not achieve as high as boys. In addition, Sherman and Fennema (1977) found no evidence that girls were intrinsically less interested in mathematics problem-solving.

Some of the reasons for the achievement differences in mathematics that do exist paralleled those suggested by science educators. These reasons included fewer role models or other factors related to teachers such as expectancy effects (Brophy & Goode, 1974; Hallinan & Sorensen, 1987; Leinheardt, Seewald, & Engel, 1979; Meece et al., 1982; Rowe, 1988), the perception of math as a male-oriented subject (Hallinan & Sorensen, 1987; Sherman, 1980; Stein & Smithells, 1969; Wood & Ferguson, 1974), and the avoidance of higher level math classes (Hallinan & Sorensen, 1987; Sherman, 1982a). Interestingly, some research has also shown that girls sex-typed mathematics as less masculine than did boys, but still did not elect to take higher level math courses (Sherman & Fennema, 1977; Sherman, 1982a). In addition, some research in mathematics education has

also examined same-sex and coeducational instruction as an important factor in the choice of classes one takes and in achievement level (e.g., Rowe, 1988).

However, researchers in mathematics have gone one step further and examined other self-perception variables that may influence achievement. One important self-perception variable that researchers have found to influence achievement is confidence in learning, especially the confidence of girls. Fennema and Sherman (1977) found that girls were less confident than boys in learning mathematics, even those girls with the same ability as boys. The impact that this lack of confidence has on achievement is well-documented. Confidence has been shown to be significantly related to enrollment behavior (Fennema & Sherman, 1977; Sherman, 1981, 1982b), interest in mathematics (Sherman, 1982b), and mathematics achievement (Bandura & Schunk, 1981; Rowe, 1988).

Confidence may be influenced by other variables as well. The perception of mathematics as a male domain has been shown to have its effect primarily as a mediator of confidence. Those girls who sex-typed math as less masculine had higher confidence in their ability to learn math. Interestingly, the extent to which mathematics is considered a male domain has been found to be related more to girls' than to boys' achievement (Rowe, 1988; Sherman & Fennema, 1977).

A second area that mathematics educators have examined has been the perceived usefulness of mathematics. Perceived usefulness similarly has been shown to be related to confidence; those who perceive math as more useful will be more confident in their ability to learn math (Rowe, 1988; Sherman, 1981, 1982b). Because boys have generally perceived math to be more useful than have girls (Fennema & Sherman, 1977; Hilton & Berglund, 1974), boys would, therefore, tend to display more confidence. Meece et al., (1982) have focused on confidence and perceived usefulness as two separate and necessary entities for achievement. Their model linked academic choice (e.g., electing to take higher level math

courses) to expectations of success and the subjective value of the course. In order for one to choose higher level math courses, one would have to not only possess confidence in one's ability to learn, but also would have to view the course as one of value. While the relationships between confidence and other variables have not been definitively established, it is quite clear that achievement of girls in areas that have been male-dominated may be affected differentially by several self-perception variables.

Although research examining same-sex and coeducational schools in general has investigated achievement of students in various subjects (including mathematics achievement), only recently has specific research been undertaken to examine the effect of class type on mathematics' achievement and variables affecting that achievement. Rowe (1988) was able to randomly assign junior high school students into either same-sex or coeducational classes for math instruction over the course of two years. Random assignment was important because one of the foremost criticisms of research examining same-sex and coeducational schools had been the contention that the self-selection of students into same-sex schools had confounded the findings (Marsh, 1989). Unfortunately, due to scheduling problems, some of the students in Rowe's study were forced to switch to the opposite class in the second year. However, this switch afforded the opportunity to examine a possible shift in attitudes and achievement from coeducational classes to same-sex classes or vice versa. Rowe found a strong relationship between achievement and confidence, especially for students in same-sex classes. In addition, students in the same-sex classes increased in confidence over time. Confidence also was a significant predictor of enrollment in an upper level math course the following year. Finally, he found that boys who were switched to the same-sex class increased in confidence while girls who were switched to the coeducational classes decreased in confidence.

Examples from these two disciplines have demonstrated that differences in students' perceptions may not only be related to achievement differences, but might also be a function of the type of class in which one learns. Examining confidence and the factors that may influence it may provide insights into existing educational practices. The role of self-confidence (or self-efficacy) and its impact on learning is discussed next.

Confidence and Self-efficacy Theory

Confidence has been viewed generally as a global term indicating a belief in one's own abilities. Bandura (1986) used the term "self-efficacy" to refer to people's judgments of their capabilities to organize and execute courses of action to attain certain performances. Therefore, self-efficacy is not one's perceptions of personal skills but is a judgment of one's ability to use the skills one possesses. Although ability contributes to performance, perceived self-efficacy operates partially independently of those abilities (Bandura, 1986). Furthermore, in order for self-efficacy beliefs to influence actions, one must possess the requisite skills as well as proper incentives or motivations.

According to Bandura (1977, 1986), self-efficacy judgments will have diverse effects in any achievement setting. Perceived self-efficacy will influence one's choice of activities, how much effort one chooses to put into the activity, and the amount of persistence sustained by the individual who experiences failure. Individuals high in self-efficacy in a particular domain will choose activities that will contribute to the growth of competencies in that domain, with each new success fostering an incentive to attempt more difficult skills. When difficulties arise, those high in self-efficacy will exert greater effort to overcome those difficulties than those who entertain self-doubts. Furthermore, highly efficacious

individuals will maintain that effort longer, thus increasing probabilities for success, and thereby strengthening their efficacy beliefs.

People gain knowledge about their skills or about their ability to acquire skills from four principle sources of information. The most influential source of efficacy information is through performance accomplishments because they are based on actual mastery experiences. Secondly, people may increase or decrease their own efficacy by watching similar others succeed or fail. A third source of efficacy is through verbal persuasion, either by another person or through one's own self-talk. A fourth source of information is gained through one's physiological state; reading one's own somatic arousal level may give clues as to how efficacious one really feels.

The Conceptualization of Self-efficacy in Education

Schunk (1984, 1985) used Bandura's theory of self-efficacy to provide an understanding of what he called "motivated learning." Motivated learners are driven to acquire skills and knowledge during activities rather than to simply complete the activities (Brophy, 1983). However, Schunk (1985) also stressed the importance of possessing necessary incentives to perform. Students low in self-efficacy may work only halfheartedly on a task because they doubt their ability to perform well. On the other hand, highly efficacious students might work only halfheartedly not because they doubt their ability but because completing the task may not be important to them.

Fennema and Peterson (1985) proposed a model of mathematics achievement that also draws from Bandura's theory of self-efficacy (see Figure 1). They hypothesized that in order to do mathematics, one must engage in autonomous learning behavior. This behavior included working independently on high-level tasks, persisting at those tasks, and choosing to do and achieve success in those

tasks. Whether or not one chooses to engage in autonomous learning behavior is a function of both one's internal motivational beliefs and external or societal influences. Internal motivational beliefs include confidence in one's ability to learn, gender-role orientation, the perceived usefulness of the task, and attributional style. In addition, external or societal forces can also influence internal beliefs. Although there can be many external factors that influence either motivation or directly influence autonomous learning behavior, Fennema and Peterson focused on two of the most important external influences: teacher-pupil interactions and classroom activities in which boys and girls participate.

An important external factor that may play a role in increasing or undermining students' efficacy beliefs is class context (Schunk, 1984). Two factions of class context deserve mention. The first is the teacher's behavior. Male and female teachers have been shown to be more similar than different, both in their general approaches to instruction and in their interactions with male and female students (Brophy, 1985). However, teachers may not react to male and female students similarly. Probably the most common difference in teaching behavior toward boys and girls is that boys get more attention from teachers, which may or may not be positive (French & French, 1984). Part of this is due to the fact that boys engage in more attention-getting techniques. Also, teachers have been found to have higher educational expectancies for boys, especially during the adolescent years (Good, Sikes, & Brophy, 1973). Overall, though, these differences are relatively minor and are usually situationally determined rather than planned and systematic (Brophy, 1985).

On the other hand, there is evidence that boys and girls in the same learning context may perceive that environment differently (Brophy, 1985; Eccles & Blumenthal, 1985). For example, boys and girls in a coeducational physical education class may view what is happening in the class differently from one

another, with boys finding that coeducation fosters efficacious beliefs while girls do not. In fact, Eccles and Blumenthal (1985) agree with research presented earlier that some environments (possibly coeducation) may facilitate achievement in boys, while the same context may dampen or have little positive effect on girls' achievements. In some classrooms, they felt that the brightest girls were not being nurtured to the same extent as were the boys. Powell and Powell (1983) echoed this sentiment, as they felt that high schools often posed a problem for female adolescents because the culture of the high school does not sufficiently maintain the zest that girls often display in earlier grades. In addition, classroom climate may even play a role in reinforcing sex differences in attitudes, beliefs, and performances.

Summary

The coeducation/same-sex debate has had a long and controversial history. Proponents and opponents alike have been able to produce research that supports their stance. Although this research has certainly been equivocal, two clear trends, one in education in general and one in physical education, can be cited.

The first obvious trend is that boys seem to benefit from coeducation. Even proponents of same-sex education do not deny this observation. However, the effect of coeducation or same-sex education on girls has not been shown as clearly. Quantitative research is somewhat divided, but observational research, especially in physical education, has identified a somewhat dimmer view of coeducation for girls. Unfortunately, there has not been enough research of this type to arrive at any firm conclusions concerning girls.

The second trend is that research comparing performances of students in coeducational and same-sex physical education classes has shown little or no performance differences. Most of the coeducation/same-sex research in physical

education has been outcome-oriented; that is, the question has been "who will perform best after a physical education instructional unit - students in coeducational classes or students in same-sex classes?" However, this type of research does not look at the antecedents of performance. Like earlier research in mathematics and science education, examining perceptions that students have about themselves and their physical education activities as well as their class environments may provide results that are not only more informative but are also more useful to physical educators.

The role that self-confidence or self-efficacy has in achievement was discussed in relation to class context. Research in disciplines other than physical education has shown that confidence plays a role in future course choices and in achievement, and that confidence may also be mediated by class context (i.e., coeducational or same-sex). In addition, how useful one considers a class to be or how one sex-types a class may influence self-confidence in that class. Furthermore, some research has found more sex-typing of activities or courses in coeducational contexts than in same-sex ones. Physical educators may be able to monitor their students' perceptions of their abilities and of the activities, and subsequently structure activities where all students can be successful. For example, if findings suggest that girls are less confident in coeducational classes, instructors in those classes should be particularly aware of that situation and try to increase their chances for success. In addition, if research finds that gender-role stereotypes toward various activities are occurring more in coeducational classes than in same-sex ones, teachers should be especially cognizant of students' perceptions in those classes and work to change them.

The present experiment examined perceptions that students in physical education had about their abilities, the activity (basketball), and their class environment. Of prime importance in this investigation was the effect that attending

either a coeducational physical education class or a same-sex class had on the self-confidence of the students in those classes. Additionally, students' perceptions of their class environments were examined.

CHAPTER III

Method

Subjects and Design

Subjects for this experiment were 204 middle school students (108 boys and 96 girls) and 194 high school students (100 boys and 94 girls) who attended four middle class, suburban schools in the mid-Michigan area. Permission was obtained from school administrators, physical education teachers, parents, and the students themselves for participation in this experiment. Subjects were students who attended required coeducational physical education classes which were taught by either a male or a female teacher. Four physical education classes in each of the four schools participated in the experiment. In two of the classes, students were split according to gender with the male instructor teaching the boys and the female instructor teaching the girls. In the coeducational classes, students were randomly assigned to either the male teacher or the female teacher, with boys and girls evenly divided between the two classes. Therefore, essentially four new classes were created at each school. All eight of the high school classes were composed of ninth graders, whereas the eight middle school classes were composed of both sixth and seventh graders. All middle school same-sex classes and two middle school coeducational classes consisted of seventh graders while two coeducational classes consisted of sixth graders. Originally the intent was to use the same grade at each level, but difficulty in obtaining schools for the experiment resulted in the use of the two sixth grade classes at one of the middle schools. Table 1 provides a summary of the design and assignment to groups.

The instructors who implemented the treatment in this study were experienced

teachers. The number of years of experience ranged from 6 to 26 years. Male teachers (n = 4) averaged 22.5 (SD = 6.35) years of experience and female teachers (n = 4) averaged 11 years (SD = 6.48). Middle school teachers had been teaching for a slightly longer period of time (M = 18.75, SD = 9.22) than had high school teachers (M = 14.75, SD = 8.66). In addition, the teachers had been in their respective school systems an average of 7.75 years (SD = 4.86) for the female teachers and 18 years (SD = 10.10) for the male teachers. Middle school teachers averaged 14.5 years (SD = 10.47) in their respective schools while high school teachers averaged 11.25 years (SD = 8.88).

Table 1

Design Summary

	Male n*	Female n*	SubTotal
Coeducational Classes:			
Middle School	54	43	97
High School	44	40	84
SubTotal	98	83	181
Same-sex Classes Classes:			
Middle School	61	53	114
High School	56	57	113
SubTotal	117	110	227
Total	215	193	408

*n's reflect the total number of students in the classes. Due to missing data, not all subjects were included in the MANOVAs.

For the purpose of this experiment, each teacher taught one coeducational class and one same-sex class for 10 lessons of basketball. Male teachers taught all-boy classes while female teachers taught all-girl classes. The teachers were required to keep attendance, follow the supplied lesson plans, and participate in an interview after the instructional unit. As compensation, all teachers were offered $40.

Dependent Measures

Self-perception Variables

Self-confidence for Learning Basketball Scale. This scale was adapted from Fennema and Sherman's (1976) Confidence in Learning Mathematics Scale to reflect confidence in learning basketball. The adapted scale consisted of five positively and five negatively stated items, with responses on a scale of 1 (strongly disagree) to 5 (strongly agree). The negatively worded items were reverse scored. A student's confidence in learning basketball score was the mean of the 10 questions employed in the scale, with the higher scores indicating greater confidence. This scale measured a student's overall confidence in learning basketball skills and is included in Appendix A. Fennema and Sherman reported a split-half reliability of .93 in their original scale of 12 items. Split-half reliability for subjects in the present study was .78.

Gender-appropriateness of Basketball Scale. The perception of basketball as masculine (i.e., more appropriate for males) was measured by an adaptation of Fennema and Sherman's (1976) Math as a Male Domain Scale. This adapted scale was also a 10-item questionnaire which used the same 5-point Likert Scale as the Confidence in Learning Basketball Scale (see Appendix A). Positive items were reverse scored so that the higher scores would reflect a greater perception of basketball as a masculine activity. Split-half reliability for the Fennema and Sherman's original scale of 12 items was .87. Split-half reliability for the subjects in this study was .82.

Usefulness of Basketball Scale. Students' perceptions of the usefulness of learning basketball for their future leisure time was assessed by a revision of the Usefulness of Mathematics Scale (Fennema & Sherman, 1976) which is also included in Appendix A. As in the previous two scales, this questionnaire had five positively and five negatively worded items and employed a 5-point Likert scale, with negatively stated items being reverse scored. Fennema and Sherman reported a split-half reliability of .88 for the 12 items on their scale. Split-half reliability for the subjects in this study was .77.

Although all of the original scales of Fennema and Sherman (1976) each contained 12 items, the scales for this study were limited to 10 statements each in order to limit the number of questions that subjects would be answering. Results of the split-half reliability tests on the adapted scales supported the internal consistency within each scale.

Class Environment

Perceptions of the class environment were examined by three questionnaires. Students first stated their perceptions of the overall class environment. Next, they answered a gender-specific questionnaire that asked them to answer in relation to their own gender. The third questionnaire was identical to the second except that students answered in relation to the opposite gender.

Perceptions of the overall class environment. The first questionnaire dealt with students' perceptions of the overall class environment, taking into consideration the class as a whole. This questionnaire, designed by the author, consisted of one statement for each of six environmental variables rated on a 10-point Likert scale. Students rated perceptions of the overall class environment in relation to student behavior, class competitiveness, teacher support, student affiliative and helping behavior, student involvement in the class, and class enjoyment (see Appendix B). These environmental variables (with the exception of class enjoyment) were chosen to parallel the subscales of the gender-specific perceptions of the environment questionnaire that is discussed next.

Gender-specific perceptions of the environment: own gender. In addition to the overall perceptions of the environment, perceptions were examined with respect to gender of the subject. The scale chosen to measure these perceptions was adapted from the Classroom Environment Questionnaire (Moos & Trickett, 1973) to make them applicable to physical education and basketball. Moos and Trickett's original scale consisted of nine subscales that measured students' perceptions of their class and teacher. For this study, adaptations of only five of the subscales were used: (a) class order and organization, (b) competition, (c) teacher support, (d) affiliation, and (e) involvement. The subscales of teacher innovation, task orientation, teacher control, and rule clarity were not included. Moos and Trickett reported an internal consistency for their five subscales, ranging from $r = .67$ (competition) to $r = .85$ (student involvement). Six-week test-retest reliability ratings ranged from $r = .73$ (affiliation) to $r = .89$ (teacher support).

Four of the subscales for this study consisted of 10 items, each rated on a 5-point Likert scale. However, the class order and organization subscale was broken down into two subscales of five questions each: student behavior and class organization. An examination of the questions which made up the order and organization subscale showed that five questions were specific to the student (behavior) and five were specific to the teacher (organization). Therefore, this environmental questionnaire contained six subscales. A student's score was calculated by finding the mean of all the items for each individual subscale. Internal consistency (coefficient alpha) for each subscale in this study was as follows: (a) student behavior -- $r = .74$, (b) class organization -- $r = .61$, (c) class competitiveness -- $r = .60$, (d) teacher support -- $r = .76$, (e) affiliative and helping behavior -- $r = .75$, and (f) student involvement -- $r = .79$. Deleting items individually did not result in higher coefficients for any of the subscales. A sample of the entire gender-specific environment questionnaire, referring only to girls, is located in Appendix C.

Gender-specific perceptions of the environment: opposite gender. The gender-specific questionnaire was used for two different purposes. As previously discussed, subjects

answered the questionnaire in relation to their own gender, thus providing more information than could be obtained by the earlier questionnaire which examined overall perceptions of the environment. However, subjects were also given a similar questionnaire that asked them to answer in relation to the opposite gender. In this questionnaire, the class organization subscale was omitted because this scale did not refer specifically to students and the information obtained would have been redundant.

Procedure

Permission was obtained from all school districts to conduct this study in physical education classes. A letter explaining the study was sent to the parents of the students involved and parental permission was obtained before the child was included in the data collection (see Appendix D). In addition, permission was granted by the Human Subjects Committee at Michigan State University. Students who did not receive permission to be included in the study, or who chose not to participate, continued as members of the class but did not complete any self-report forms. Confidentiality on questionnaires was maintained by the use of a code number. This code number consisted of a student's first and last initials and birthdate (for example, CL52878) and was used on all questionnaires except the post-questionnaire. The post-questionnaire was completed by students anonymously.

Physical education teachers from the four schools were enlisted to implement the treatment that consisted of a 10-lesson unit of basketball. Identical lesson plans were given to each middle school and to each high school (see Appendix E). The middle school and high school lesson plans varied somewhat due to the skill level of the students. Teachers were also given a schedule of events, a set of instructions (both verbally and in writing) concerning class management, and also received a packet of basketball instructional materials and a notebook.

Approximately a week before the experiment, subjects completed a background

questionnaire. This questionnaire asked subjects to state their age, gender, grade, and school, and to identify the sports in which they were members of a team, and also the sports in which they simply participated. In addition, they were asked to mark on a 5-point Likert scale how important it was for them to learn skills in basketball class (see Appendix F).

In the class period prior to beginning the basketball unit, students completed the Confidence in Learning Basketball Scale, the Usefulness of Basketball Scale, and the Gender-appropriateness of Basketball Scale. As suggested by Fennema and Sherman (1976), items in these scales were distributed throughout one instrument. This scale was completed while students were still in their regular physical education classes (that is, before they knew that they would be attending different classes) and was administered by the experimenter and an assistant.

After classes had been assigned as either coeducational or same-sex, students in the coeducational classes were randomly assigned to either the male teacher or the female teacher. Subjects then received instruction in basketball skills for 10 lessons. As stated earlier, teachers were given lesson plans in order to keep lesson content consistent from school to school and from class to class. Lessons were specific to appropriate objectives at each grade level and were to be identical across classes within each grade. From observations by the experimenter and from interviews with the teachers, classes were not identical in the amount of time spent on specific skills, although they were identical in content. Because every class is inherently unique, some of the material in the lesson plans was accomplished faster in some classes than others. Essentially, the lessons were, if not identical, very similar in coeducational and same-sex classes.

On the last day of the unit, students were first asked to complete the overall environment scale. They then completed the gender-specific environment scale in which they answered for their own gender. Next, they completed the questionnaire containing the pretest subscales: the Confidence in Learning Basketball Scale, the Usefulness of Basketball Scale, and the Gender-appropriateness of Basketball Scale. Finally, students completed the

gender-specific environment questionnaire again, this time in relation to the opposite gender.

In the physical education class following their basketball unit, students completed a post-questionnaire concerning their class type preferences and their general perceptions of coeducational physical education classes, and also rated their basketball ability (i.e., did they perceive themselves to be better, worse or about the same as others of the same gender in their basketball class). To maximize honest answers on this questionnaire, no student identification was recorded. The post-questionnaire is contained in Appendix G.

Throughout the experiment, the researcher visited each of the classes three times to insure that procedures were being implemented. In addition, interviews were conducted with each teacher after the basketball unit to obtain background information and to verify that the classes were conducted properly throughout the unit. Teachers were also free to talk about how they felt the classes progressed and their own preferences for class type.

Treatment of the Data

The data were analyzed using MANOVAs and regression analyses. Initially, Pearson product moment correlations were obtained for all pre- and post-instruction dependent variables to determine the appropriateness of analyzing them in a MANOVA.

To examine possible differences on all post-instruction dependent variables between boys taught by the male instructor in a coeducational class and boys taught by the female instructor in a coeducational class (or girls taught by a male instructor and girls taught by a female instructor), multivariate tests on gender of instructor were conducted on boys and girls at each grade level. If the multivariate F was significant, the univariate F's were examined. If no differences existed, scores from these classes were combined for all further analyses. If there were differences, only comparisons between same gender students and teachers would be made.

To examine whether the girls in the coeducational classes differed from the girls in the

single-sex classes and boys in the coeducational classes differed from boys in single-sex classes on the pre-instruction self-perception variables, preliminary multivariate tests on class type were conducted at each grade level, with the pre-instruction confidence, usefulness, and gender-appropriateness scales as the dependent variables. If differences existed, the pre-instruction scores would be used as covariates in the subsequent analyses.

Hypotheses 1 through 5 were tested a priori using multivariate unique contrasts. A combination of forced entry and stepwise solution regression analyses were conducted to test Hypothesis 6. Separate post hoc analyses examining the self-perception variables, perceptions of the overall environment, and gender-specific perceptions of the environment in which students were answering for their own gender were conducted using 2 x 2 x 2 (Class Type x Gender x Grade) MANOVAs. All tests of simple effects were compared using Tukey post hoc tests. Also, a 2 x 2 x 2 (Gender x Grade x Gender Viewpoint) mixed factorial design with gender viewpoint as the within-subjects factor was utilized to compare gender-specific perceptions of the environment between own gender and opposite gender. Lastly, students' class type preferences were analyzed by chi square tests and student answers to open-ended questions concerning likes and dislikes of coeducational classes were tallied, grouped, and presented as percentages and modal responses.

CHAPTER IV

Results

This chapter is divided into two major sections. In the first section, the results of a priori tests on the individual hypotheses are reported as categorized in Chapter 1. The second section reports all post hoc analyses. Included under the post hoc analyses section are those multivariate analyses that were not stated as a priori hypotheses. Because a great portion of this study was exploratory, the post hoc analyses comprise the bulk of the results section. The post hoc analyses are further subdivided into (a) analyses that examine the self-perception variables, (b) analyses that examine perceptions of the environment, and (c) analyses conducted on the post-questionnaire. The alpha level for all analyses was set at .05; however, actual p values are given when available so that significance levels can be reported more accurately. To test for simple effects, Tukey post hoc pairwise comparisons were utilized throughout the analyses. Also, because of unequal n's in each cell, the regression approach to MANOVA was utilized. Using this method, all effects were assessed simultaneously, with each effect adjusted for all other effects in the model. Correlations for the variables involved in each MANOVA are reported in Appendix H. For each multivariate test that was significant, the Wilks' Lambda F is reported. Also, within each MANOVA, discriminant analyses were conducted. Standardized discriminant function coefficients (DFC) are reported for each significant variable as well as effect sizes (ES).

Preliminary Analyses

Initially, several preliminary analyses were conducted. In the first analysis, pre-treatment self-perception variables (confidence, usefulness, and gender-appropriateness of basketball) were analyzed to check for preexisting differences between same-sex and coeducational classes. Separate analyses were conducted for each gender and grade level. No class type differences were found in any of the analyses; therefore, pre-treatment variables were not used as covariates for the post hoc analyses.

The second analysis was conducted to ascertain whether gender of the teacher in the coeducational classes influenced self-perception variables. For each gender and grade level, a one-way MANOVA was conducted with the Confidence in Learning Basketball Scale, the Usefulness of Basketball Scale, and the Basketball Gender-appropriateness Scale as dependent variables and teacher gender as the independent variable. None of the four analyses resulted in significant findings. Therefore, for purposes of analyzing the self-perception variables, students in coeducational classes taught by the male teacher were combined with those taught by the female teacher. Summary tables for these analyses are contained in Appendices I and J.

Further preliminary analyses were conducted to determine if gender of teacher had an effect on students' perceptions of environmental variables in the coeducational classes. Two one-way ANOVAs were conducted for teacher gender: one using perceptions of the overall environment as dependent variables and one using perceptions of students when they answered for their own gender. Neither of these two analyses resulted in any significant differences. Therefore, subjects in coeducational classes were combined for the next two analyses. Summary tables for these analyses are contained in Appendices K and L.

Finally, one-way MANOVAs were conducted for each gender at each grade level using teacher gender as the independent variable and the gender-specific environmental

variables (opposite gender) as the dependent variables. Only students in coeducational classes were included in these analyses because they were the only students to answer opposite-gender questionnaires. These analyses revealed a significant teacher gender effect for middle school girls, F (5, 37) = 2.48, $p < .05$. Univariate tests showed that student behavior was the only variable that reached significance, F (1, 41) = 6.83, $p = .01$. The perceptions of middle school girls who had a female teacher were higher (M = 3.264, SD = .744) than the perceptions of girls who had a male teacher (M = 2.724, SD = .598) regarding the behavior of boys in their classes. Because of this finding, student behavior was analyzed separately from the other environmental variables, with separate analyses for girls taught by female teachers and for girls taught by male teachers. Because there was no significant difference in student behavior when the influence of teacher gender was examined for boys, all boys were combined into one analysis. Summary tables for these analyses are contained in Appendix M.

Experimental Hypotheses

Effects of Class Type on the Self-perception Variables

Hypothesis 1 stated that boys at all levels would exhibit greater self-confidence for learning basketball, view basketball more strongly as a male activity, and perceive basketball as more useful to future recreational activities than would girls. Results of a multivariate a priori analysis, examining gender differences for all the self-perception variables together, showed partial support for this hypothesis. The hypothesis that boys would be more confident than girls was not supported, $F(1,392) = 3.35$, $p = .068$. However, boys perceived basketball as being more masculine than did girls, F (1,392) = 170.78, $p < .001$ (ES = 1.34), and they also considered basketball as being more useful, F (1,392) = 6.02, $p = .015$ (ES = 0.24). A breakdown of all means and standard deviations for the self-perception variables are reported in Table 2.

Table 2

Summary Table of Self-perception Means and Standard Deviations (in parentheses)

	n	Confidence	Usefulness	Gender-appropriateness
MALES				
Middle School				
Coed	54	3.66 (.49)	3.90 (.70)	2.40 (.76)
Same-sex	54	3.47 (.58)	3.75 (.90)	2.54 (.75)
High School				
Coed	44	3.55 (.39)	3.59 (.82)	2.35 (.77)
Same-sex	56	3.35 (.48)	3.36 (.98)	2.48 (.74)
Total	208	3.50 (.49)	3.65 (.83)	2.45 (.75)
FEMALES				
Middle School				
Coed	42	3.41 (.56)	3.41 (1.04)	1.71 (.54)
Same-sex	53	3.56 (.48)	3.65 (.88)	1.59 (.49)
High School				
Coed	40	3.27 (.63)	3.37 (.85)	1.56 (.50)
Same-sex	53	3.41 (.45)	3.34 (.72)	1.52 (.44)
Total	188	3.42 (.52)	3.45 (.86)	1.59 (.49)

Hypothesis 2 stated that girls in same-sex classes would exhibit greater self-confidence, perceive basketball as less of a masculine activity, and perceive basketball as more useful than girls in coeducational class, whereas boys in coeducational classes would exhibit higher confidence scores and perceive basketball as less of a masculine activity than would boys in same-sex classes. Again, partial support for this hypothesis was received. A multivariate a priori analysis comparing the confidence levels of girls in

coeducational classes with girls in same-sex classes did not quite reach significance, $F(1,392) = 3.28$, $p = .071$. There were also no class type differences in girls' perceptions of basketball as a masculine activity or how useful they perceived basketball to be. However, when boys in coeducational classes were contrasted with boys in same-sex classes, results showed that boys were more confident in coeducational classes than in same-sex ones, $F(1,392) = 7.86$, $p = .005$ ($ES = 0.29$), thus lending partial support to the hypothesis. Also, boys in coeducational and same-sex classes did not differ on how gender-appropriate they perceived basketball to be. Confidence means (with standard deviations in parentheses) for boys and girls in coeducational and same-sex classes are graphically depicted in Figure 2.

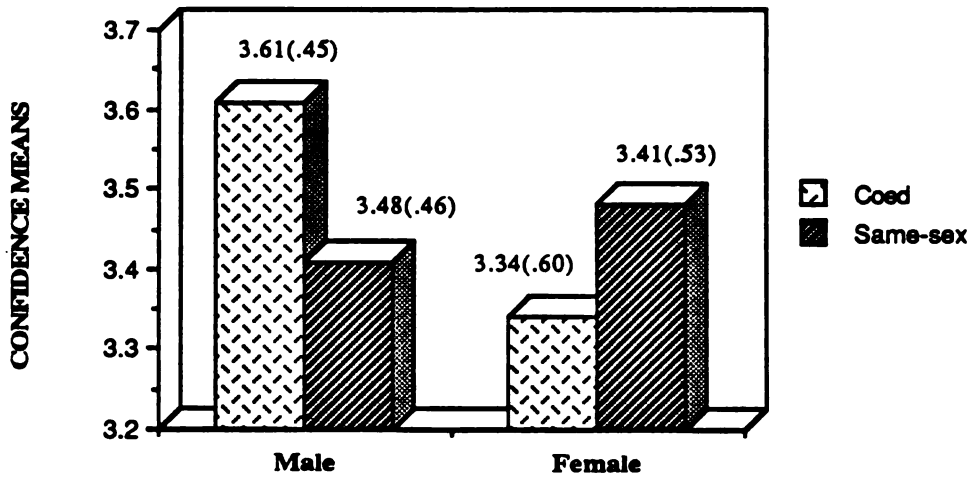


Figure 2. Means and standard deviations (in parentheses) for boys and girls in each class type for confidence in learning basketball (5-point scale).

Effects of Class Type on Perceptions of the Environment

Hypothesis 3 stated that boys in same-sex classes would view their classes as more competitive than boys in coeducational classes, whereas girls in coeducational classes would view their classes as more competitive than girls in same-sex classes. To examine

this hypothesis, two a priori analyses were conducted. The first analysis dealt with students' perceptions of the overall environment, taking into consideration all students in the class, while the second analysis examined perceptions of the environment in which subjects were concerned only with their own gender. Again, an a priori analyses, contrasting boys in coeducational classes with boys in same-sex classes and girls in coeducational classes with girls in same-sex classes, was conducted. For overall environment, boys viewed same-sex classes as more competitive than coeducational ones, F (1,393) = 10.37, p = .001 (ES = 0.45), supporting the first part of the hypothesis. However, there was no difference between girls in coeducational classes and girls in same-sex classes in perceptions of class competitiveness, F (1,393) = .072, $p > .05$ (see Figure 3).

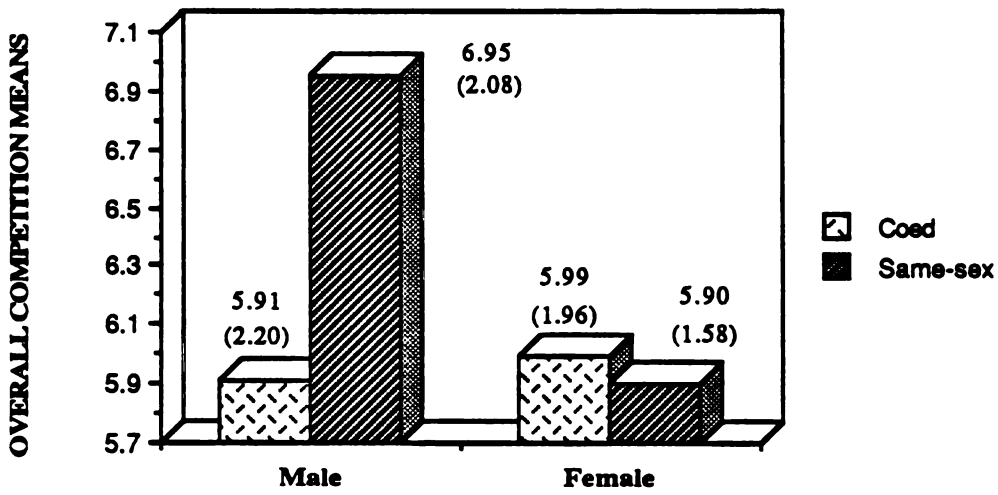


Figure 3. Means and standard deviations (in parentheses) for boys and girls in each class type for overall class competitiveness (10-point scale).

When boys answered only for their own gender, they still perceived more competition among themselves in same-sex classes than in coeducational classes, F (1, 393) = 6.32, p = .012 (ES = 0.34), again supporting the hypothesis. However,

opposite to the hypothesis, girls, like boys, felt that there was more competition among themselves in same-sex classes than in coeducational classes, F (1,393) = 13.67, $p < .001$ (ES = 0.58). The means and standard deviations for this analysis is depicted in Figure 4. (Note: in each figure depicting gender-specific perceptions of the environment, boys answering for boys are designated as "male/male", whereas girls answering for girls are designated "female/female").

Hypothesis 4 stated that girls in coeducational classes would view their class environment as more competitive than boys in coeducational classes. An a priori analysis contrasting boys and girls in coeducational classes provided no support for this hypothesis, as boys (M = 5.91, SD = 2.20) and girls (M = 5.99, SD = 2.51) in coeducational classes did not differ in the amount of competition perceived, F (1, 393) = .054, $p > .05$. Contrary to the hypothesis, when students answered for their own gender, boys in coeducational classes perceived more competition among themselves than girls in coeducational classes did among themselves, F (1, 393) = 40.20, $p < .001$ (ES = 0.88).

Hypothesis 5 stated that students in same-sex classes would perceive their classes as having better student behavior and more class organization than students in coeducational classes. Results of the a priori analysis that contrasted students in coeducational classes with students in same-sex classes showed that students perceived better overall behavior in same-sex classes, F (1,393) = 5.54, p = .019 (ES = 0.24), thus providing support for this part of the hypothesis. However, when students answered only for their own gender, boys and girls both felt that they were better behaved in coeducational classes than in same-sex ones, F (1,393) = 16.55, $p < .001$ (ES = 0.59). There was no difference in the perceptions of class organization between students in coeducational classes and students in same-sex classes, F (1,393) = .01, $p > .05$. Means and standard deviations for these comparisons can be found in Table 3.

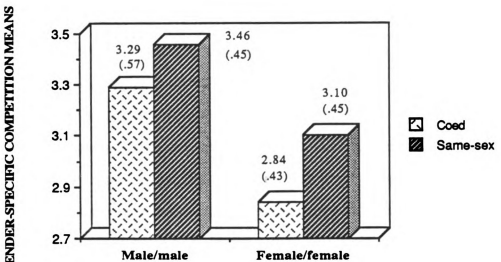


Figure 4. Class competitiveness means and standard deviations (in parentheses) for each class type when students answered for own gender (5-point scale).

Table 3

Means and Standard Deviations (in parentheses) for Student Behavior and Class Organization by Class Type

Variables	Coed Classes (n = 181)	Same-sex Classes (n = 216)
Overall Student Behavior	6.91 (1.83)	7.34 (1.84)
Gender-specific Student Behavior	3.46 (.69)	3.18 (.74)
Class Organization	3.74 (.60)	3.75 (.59)

Predictors of Self-confidence

Hypotheses 6 stated that how useful one considered basketball to be, how masculine one considered basketball to be (gender-appropriate), and how competitive the class was would be significant predictors of self-confidence for learning basketball. Regression analyses were conducted separately for boys and girls using both forced entry and stepwise procedures. Variables entered into the analysis were usefulness of basketball, gender-appropriateness of basketball, competitiveness of the class, student behavior, teacher support, student affiliation, student involvement, class type, importance of learning basketball skills in the class, and number of sports in which the student participated. As per the hypothesis, the first three variables entered into the analysis were usefulness of basketball, gender-appropriateness of basketball, and class competitiveness. After those variables had been entered, the remaining variables were entered into the analysis simultaneously using stepwise procedures. For boys, usefulness of basketball ($\beta = .653$, $t = 12.33$, $p < .001$) and competitiveness of the class ($\beta = -.127$, $t = -2.42$, $p = .017$) were the only significant predictors of self-confidence, accounting for 46.4% of the variance. Specifically, those who perceived basketball as more useful and who perceived the class as less competitive were more confident than those who did not. Sex-appropriateness of basketball was not a significant predictor for the boys.

For girls, usefulness of basketball was also the best predictor of self-confidence ($\beta = .492$, $t = 7.80$, $p < .001$). As predicted, gender-appropriateness of basketball was a predictor ($\beta = -.207$, $t = -4.00$, $p < .001$), along with the number of sports in which one had participated in the last two years ($\beta = .143$, $t = 2.75$, $p = .007$), perceived teacher support given to the class ($\beta = .126$, $t = 2.42$, $p = .017$), and the importance placed on learning basketball skills ($\beta = -.141$, $t = 2.38$, $p = .018$). Essentially for girls, the more useful one perceived basketball to be, the less one sex-typed basketball as masculine, the more sports one participated in, the more perceived teacher support given the class, and the

more importance placed upon learning basketball skills in class, the greater the self-confidence for learning basketball. These five variables accounted for 56.8% of the variance. Perceived competitiveness of the class was not a significant predictor for girls.

Summary of Experimental Hypotheses

Hypothesis 1 was partially supported. Overall, boys were not more confident than girls in their ability to learn basketball. However, they perceived basketball to be more useful and as more of a masculine activity than did girls. Hypothesis 2 was also partially supported. Boys in coeducational classes were significantly more confident than boys in same-sex classes. Although the means were in the hypothesized direction, girls in same-sex classes were not significantly more confident than girls in coeducational classes.

In partial support of Hypothesis 3, boys perceived the overall class environment in same-sex classes as more competitive than coeducational classes. However, girls did not perceive a class type difference in overall class competitiveness. When students answered for their own gender, boys and girls both felt that same-sex classes were more competitive than coeducational ones. Hypothesis 4 was not supported, as there was no difference between boys' and girls' perceptions of overall class competitiveness in coeducational classes. However, boys in coeducational classes felt that they were more competitive among themselves than girls in coeducational classes felt about their competitiveness with each other.

Partial support was found for Hypothesis 5. Students perceived better overall behavior in same-sex classes; however, when they answered for their own gender, boys and girls both felt that they were better behaved in coeducational classes. There were no differences in perceptions of class organization between students in coeducational classes and students in same-sex classes.

Finally, the sixth hypothesis was also partially supported. The regression analyses showed that, for boys, usefulness of basketball and overall class competitiveness were

significant predictors of confidence for learning basketball. For girls, usefulness of basketball was the strongest predictor of confidence, but gender-appropriateness of basketball, sport participation, perceived teacher support given the class, and importance of learning basketball were also significant predictors.

Further Analyses

As stated previously, post hoc analyses comprise the bulk of the results section. Specific tests of the hypotheses are not included in this section. This section is also divided into three subsections: (a) an examination of the self-perception variables, (b) an examination of perceptions of the environment, and (c) an examination of the post-questionnaire.

Self-perception Variables

Results of a 2 x 2 x 2 (Class Type x Gender x Grade) MANOVA revealed that the class type by gender interaction was significant, $F(3,386) = 4.04$, $p = .008$. Follow-up univariate tests revealed a significant interaction for confidence, $F(1,388) = 10.24$, $p = .001$ (DFC = 1.01). Post hoc tests revealed that boys in coeducational classes ($M = 3.61$, $SD = .446$) were more confident than girls in coeducational classes ($M = 3.34$, $SD = .647$), with an effect size of 0.52. Boys in same-sex classes were not more confident than girls in same-sex classes.

To examine who changed their confidence beliefs and in what direction they changed, a repeated measure MANOVA on the pre-treatment and post-treatment scores for confidence in learning basketball, usefulness of basketball, and gender-appropriateness of basketball was conducted. In relation to self-confidence, results showed that, although boys were more confident in coeducational classes than in same-sex classes, it was the boys in same-sex classes who changed significantly ($M_{pre} = 3.51$ to $M_{post} = 3.39$).

Confidence scores of boys in coeducational classes increased only slightly (M_{pre} = 3.51 to M_{post} = 3.61). Results of this analysis suggest that being in a coeducational class did not result in an increase in the confidence level of boys; rather, being in a same-sex class led to a decrease in boys' confidence levels. Confidence means of girls in same-sex classes increased from 3.42 at pretreatment to 3.50 at posttreatment, while scores of girls in coeducational classes dropped from 3.38 at pretest to 3.34 at posttest; however, neither change was significant (see Figure 5).

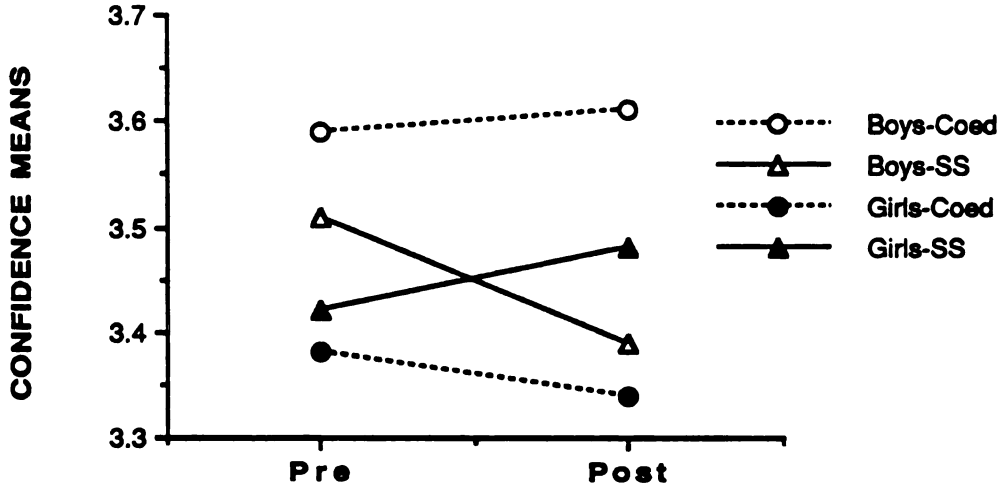


Figure 5. Pre- and post-treatment confidence means of boys and girls in each class type (5-point scale)

In addition, the 2 x 2 x 2 (Class Type x Gender x Grade) MANOVA also revealed a multivariate main effect for grade, F (3,386) = 4.12, p = .007. Follow-up univariate tests were significant for usefulness, F (1,388) = 9.15, p = .003 (DFC = -.698), and for confidence, F (1,388) = 6.39, p = .012 (DFC = -.319). Tukey post hoc tests revealed that middle school students perceived basketball to be more useful (M = 3.69, SD = .84) (ES = 0.33) and also were more confident (M = 3.53, SD = .53) (ES = 0.28) than high school students in learning basketball (usefulness: M = 3.41, SD = .84; confidence: M = 3.39, SD = .48) with usefulness being the stronger discriminator between groups.

Perceptions of Environmental Variables

This section reports the results of analyses conducted on the questionnaire items that examined perceptions of the environment in three areas: (a) perceptions of the overall environment (those in which subjects took into consideration all of the students in the class), (b) perceptions of the environment when students considered only their own gender, and (c) perceptions of the environment when students considered the opposite gender.

Perceptions of the overall environment. To examine perceptions of the overall environment, a 2 x 2 x 2 (Class Type x Gender x Grade) MANOVA was conducted. MANOVA results revealed significant multivariate main effects for class type, F (5, 385) = 3.93, p = .002, and for gender, F (3,385) = 2.80, p = .017. Means for these main effects can be seen in Appendix N. These main effects, however, were superseded by a significant multivariate class type by gender interaction, F (5,385) = 5.73, p < .001. Univariate tests showed significant interactions for student behavior, F (1, 389) = 9.77, p = .002 (DFC = -.293), affiliative and helping behavior, F (1,389) = 14.99, p < .001 (DFC = -.361), and competitiveness of the class, F (1, 389) = 5.58, p = .019 (DFC = .177).

Tukey post hoc tests of simple effects for student behavior revealed that, while there was no difference between the behavior perceived by boys and girls in the coeducational classes, girls in same-sex classes perceived their classes to be better behaved than girls in coeducational classes (ES = 0.57) and boys in same-sex classes (ES = 0.48). No difference in behavior was perceived by boys in coeducational classes and boys in same-sex classes (see Figure 6).

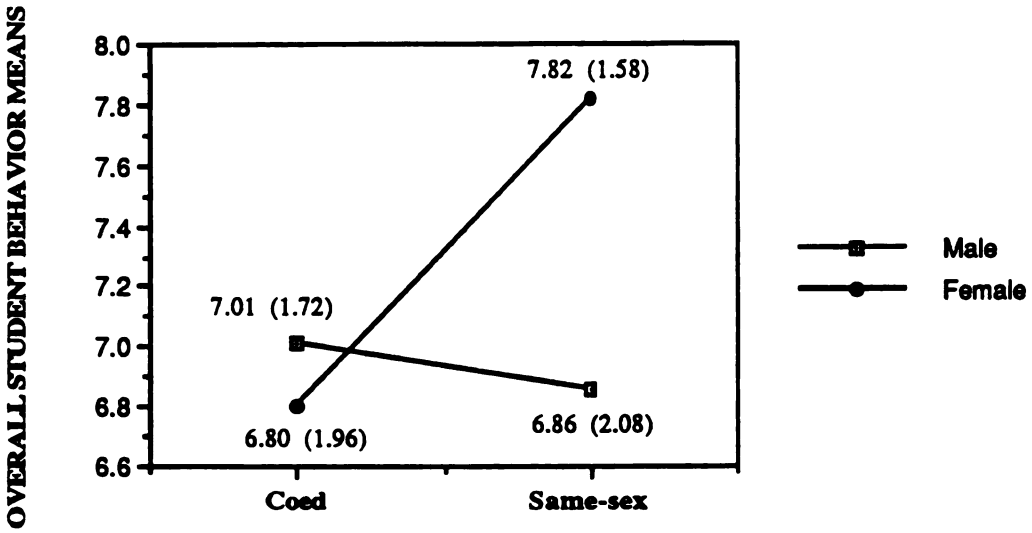


Figure 6. Class type by gender interaction for overall student behavior (10-point scale).

For affiliative and helping behavior, a similar pattern was found. Girls in same-sex classes perceived more affiliation and helping behavior than both girls in coeducational classes (ES = 0.54) and boys in same-sex classes (ES = 0.65). There was no significant difference between boys in coeducational classes and boys in same-sex classes or between boys and girls in coeducational classes (see Figure 7).

For competition, post hoc tests indicated that boys in same-sex classes perceived more competition than did girls in same-sex classes (ES = 0.47). Other differences in perceived class competitiveness are reported in the a priori section in conjunction with Hypotheses 3 and 4 (see Figure 3).

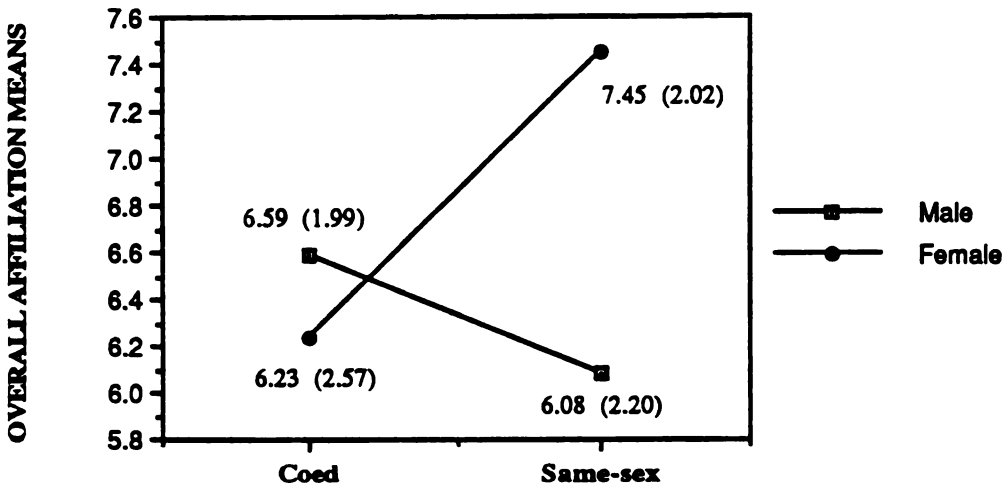


Figure 7. Class type by gender interaction for overall affiliation (10-point scale).

Gender-specific perceptions of the environment (own gender). Results of a 2 x 2 x 2 (Class Type x Gender x Grade) MANOVA, with the gender-specific environment subscales as the dependent variables, revealed multivariate main effects for class type, F (6, 384) = 7.56, $p < .001$, gender, F (6, 384) = 21.93, p , > 001, and grade, F (6, 384) = 3.07, $p = .006$. Means for these main effects are found in Appendix O. However, these main effects were superseded by a significant class type by gender interaction, F (5,385) = 2.61, $p = .024$ and a significant gender by grade interaction, F (5, 385) = 3.29, $p = .006$.

Univariate follow-up tests for the class type by gender interaction were significant for teacher support, F (1, 389) = 7.97, $p = .005$ (DFC = -.654), affiliation and helping behavior, F (1, 389) = 4.30, $p = .039$ (DFC = -.387), and involvement of the students, F (1, 389) = 4.61, $p = .032$ (DFC = -.300), with teacher support being the strongest discriminator among groups.

Post hoc tests of simple effects revealed that girls in coeducational and same-sex classes perceived themselves as receiving more teacher support than did boys in coeducational and same-sex classes (coed: ES = 0.30; same-sex: ES = 0.84) . In addition,

girls in same-sex classes perceived more teacher support for themselves than did girls in coeducational classes (ES = 0.33). There was no difference in perceived teacher support between boys in same-sex classes and boys in coeducational classes (see Figure 8).

Similarly, post hoc tests revealed that girls in coeducational and same-sex classes perceived themselves as being more affiliative than boys in coeducational (ES = 0.29) and same-sex (ES = 0.69) classes. Girls perceived the same amount of affiliation and helping behavior offered by girls in same-sex and coeducational classes. Boys, on the other hand, perceived themselves to be more affiliative in coeducational classes than in same-sex ones (ES = 0.49). This interaction is depicted in Figure 9.

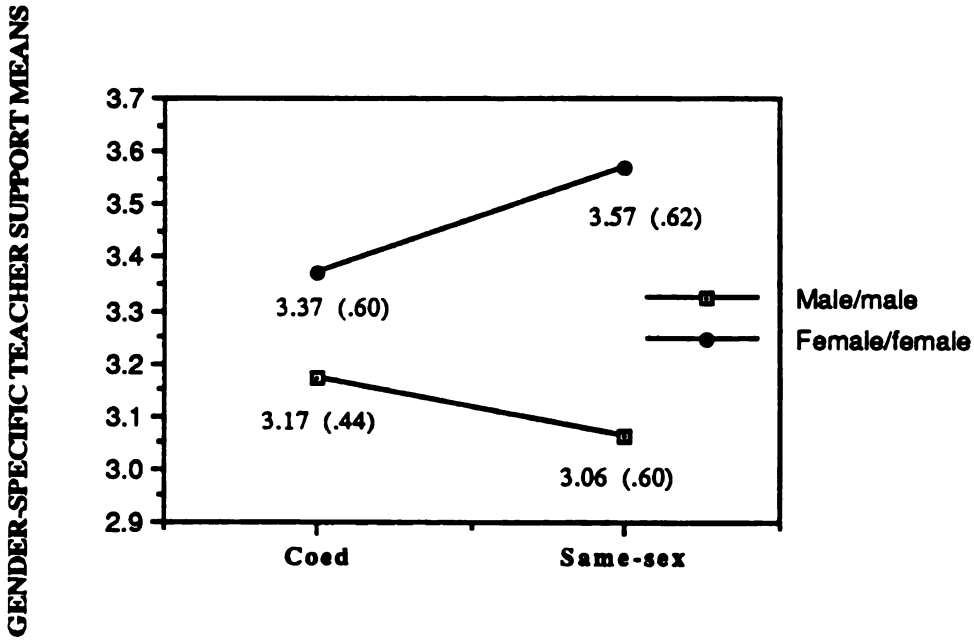


Figure 8. Class type by gender interaction for gender-specific teacher support (5-point scale).

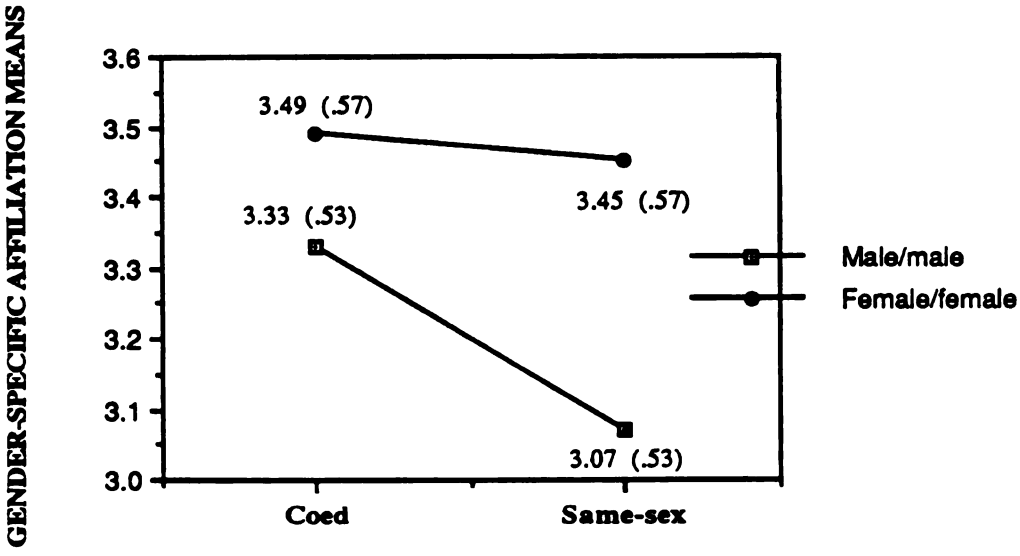


Figure 9. Class type by gender interaction for gender-specific affiliation (5-point scale).

For involvement of students in the class, post hoc tests revealed that boys perceived themselves to be much more involved in coeducational classes than did boys in same-sex classes (ES = 0.34). Girls in same-sex classes also perceived themselves to be more involved than did boys in same-sex classes (ES = 0.31). There was no significant difference in the amount of involvement that girls perceived themselves as having in either coeducational or same-sex classes (see Figure 10).

Finally, follow-up univariate tests for the gender by grade interaction showed this interaction to be significant for student behavior, F (1, 389) = 4.35, p = .038 (DFC = -.519), and for student involvement, F (1, 389) = 4.97, p = .026 (DFC = -.950), with student involvement being the strongest discriminating variable.

Tukey post hoc tests for student behavior showed that high school girls perceived themselves to be better behaved than middle school girls (ES = 0.43) and high school boys (ES = 0.91). Boys in middle school and boys in high school did not perceive a difference in their behavior. Likewise, there was no difference in perceptions of student behavior between boys in middle school and girls in middle school (see Figure 11).

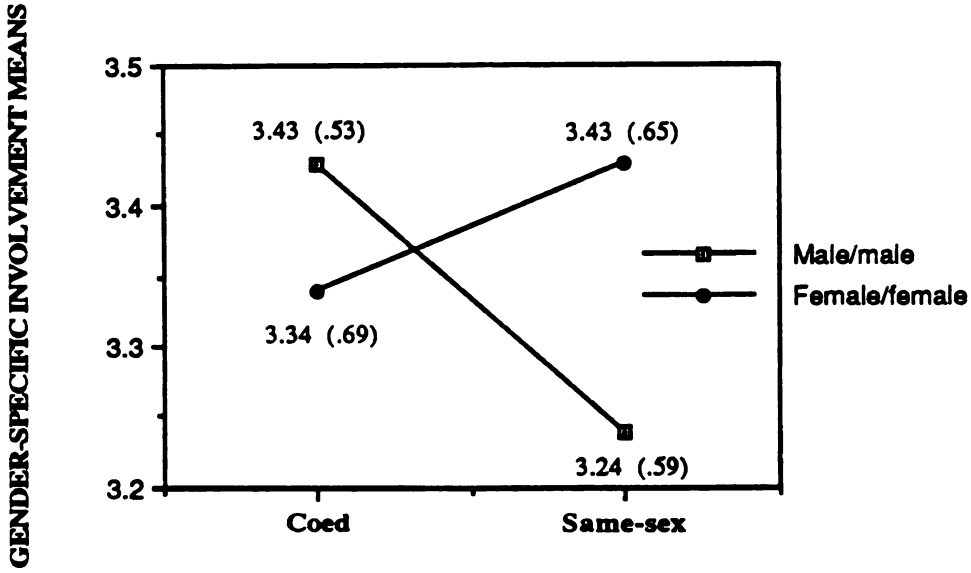


Figure 10. Gender by class type interaction for gender-specific student involvement (5-point scale).

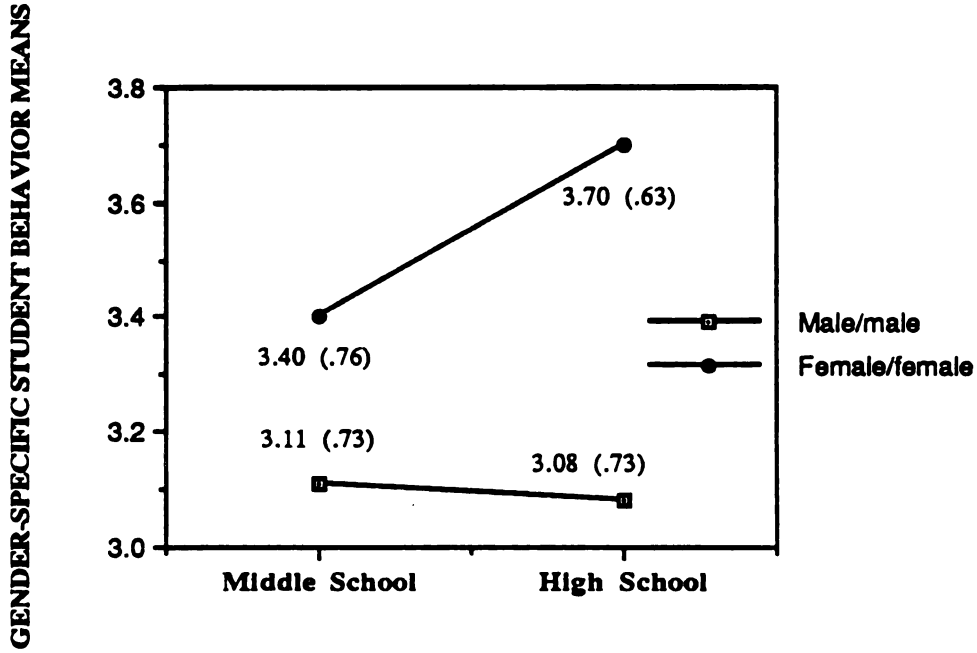


Figure 11. Gender by grade interaction for gender-specific student behavior (5-point scale).

Post hoc tests for involvement revealed that boys perceived themselves to be significantly more involved in their basketball classes in middle school than in high school. High school girls also perceived themselves to be more involved in their basketball classes than did high school boys (ES = 0.34). There was no difference between middle school boys and middle school girls in their perceptions of involvement (see Figure 12).

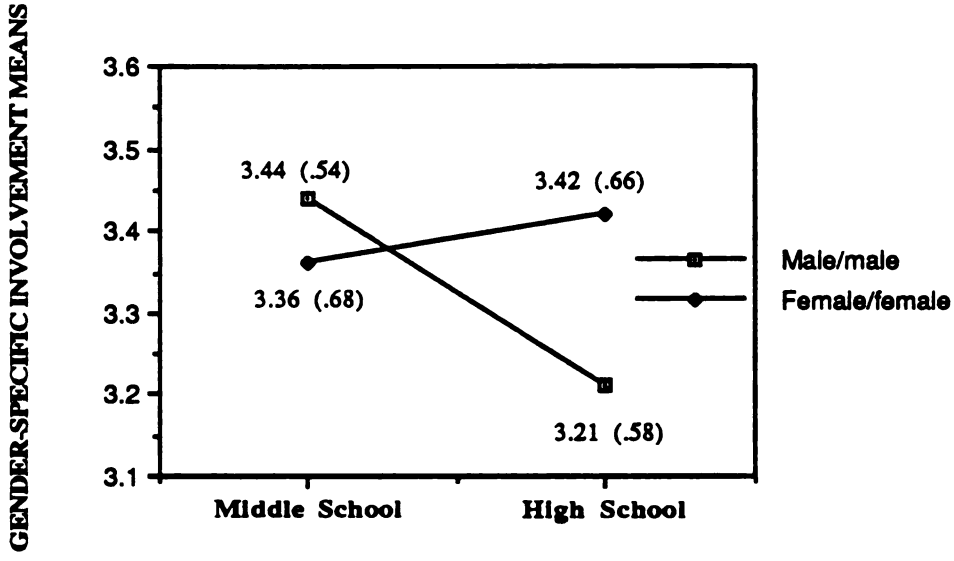


Figure 12. Gender by grade interaction for gender-specific student involvement (5-point scale).

Own gender and opposite gender comparisons of perceptions of the coeducational environment. Because the preliminary analysis revealed that student behavior was perceived differently by middle school girls, that variable was analyzed separately for each gender. A 2 x 2 (Grade x Gender Viewpoint) repeated measures MANOVA, with grade as the between-subjects factor and gender viewpoint (questionnaire for own gender/questionnaire for opposite gender) the within-subjects factor revealed that, for boys, there was a significant main effect for gender viewpoint, F (1, 95) = 3.98, p = .049. Boys

felt that girls were better behaved in class than boys (ES = 0.23). A similar result was found for girls who were taught by male instructors, F (1, 39) = 45.17, $p < .001$. Girls in male-instructed classes also believed that girls were better behaved than boys (ES = 1.37). Means and standard deviations for these comparisons are included in Table 4.

The analysis for girls who were taught by a female teacher resulted in a grade by gender viewpoint interaction, F (1, 40) = 45.55, $p < .001$. Post hoc tests indicated that middle school girls in classes taught by a female teacher did not perceive a difference in the behavior of boys and girls. However, high school girls in classes taught by a female teacher felt that they were better behaved than high school boys (ES = 2.19). This interaction is depicted in Figure 13.

Table 4

Means and Standard Deviations (in parentheses) of Own and Opposite Gender Perceptions of Student Behavior

Males	n	Own Gender	Opposite Gender
Middle School	54	3.22 (.75)	3.22 (.62)
High School	43	3.31 (.63)	3.64 (.44)
Females			
Middle School			
Male Teacher	21	3.79 (.88)	2.72 (.60)
Female Teacher	22	3.47 (.72)	3.26 (.74)
High School			
Male Teacher	20	3.67 (.58)	2.81 (.75)
Female Teacher	20	3.95 (.47)	2.58 (.78)

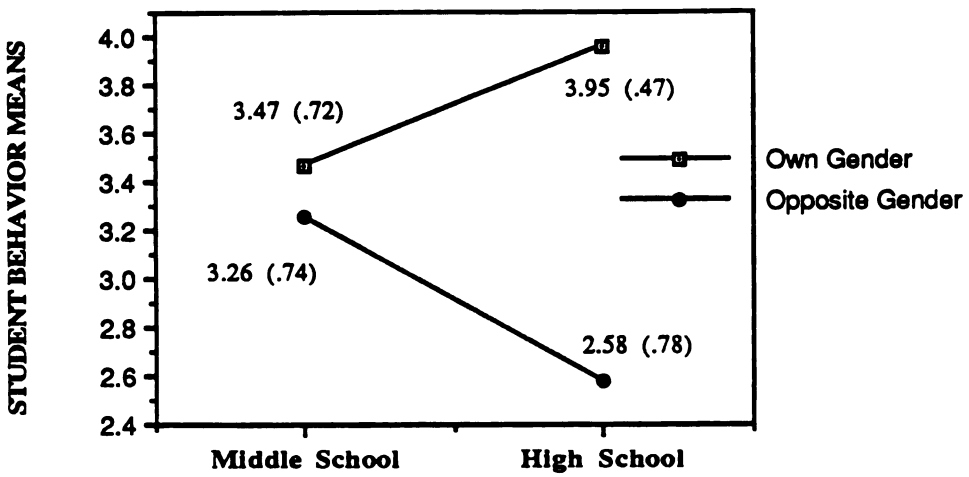


Figure 13. Grade by gender viewpoint interaction for perceptions of student behavior for coeducational girls with female teachers (5-point scale).

A 2 x 2 x 2 (Gender x Grade x Gender Viewpoint) MANOVA with repeated measures on the last factor was conducted on the remaining environmental variables of class competitiveness, affiliation and helping behavior, teacher support, and student involvement. Results of the MANOVA revealed a main effect for gender viewpoint, $F(4, 173) = 13.10$, $p < .001$, and a gender by gender viewpoint interaction, $F(4, 173) = 67.18$, $p < .001$. Means for the first order interactions and main effects can be found in Appendix P, in addition to own- and opposite-gender comparisons.

However, the three-way interaction (gender by grade by gender viewpoint) superseded these effects, $F(4, 173) = 4.78$, $p = .001$. This interaction was significant for class competitiveness, $F(1,176) = 7.00$, $p = .009$ (DFC = .216) and for student involvement, $F(1,176) = 13.39$, $p < .001$ (DFC = .946). Post hoc tests for class competitiveness showed that middle school and high school boys and girls were in agreement that boys were the more competitive (MS boys: ES = 1.32; HS boys: ES = 0.91; MS girls: ES = 2.28; HS girls: ES = 1.80). Also, at both grade levels, girls perceived boys to be higher in competitiveness than did boys (middle school: ES = 1.02; high school: ES = 0.84). However, boys and girls rated the amount of girls'

competitiveness similarly. Although cell means were generally similar between middle and high school students of the same gender, middle school girls perceived boys as being more competitive than did high school girls (ES = 0.55).

Post hoc tests for student involvement showed that, like competitiveness, boys and girls at the middle school level perceived boys to be more involved in class (boys: ES = 1.05; girls: ES = 0.81). However, at the high school level, while boys similarly perceived boys to be more involved than girls (ES = 0.44), girls did not perceive a difference between the class involvement of boys and girls. Girls gave girls higher involvement ratings than did boys at both grade levels (MS: ES = 0.60; HS: ES = 0 .48). Girls at the middle school level gave boys higher involvement ratings than boys gave themselves (ES = 0.52). At the high school level, girls and boys rated boys' involvement similarly. Finally, girls in middle school perceived boys to be more involved than did high school girls (ES = 0.60).

Post-questionnaire

This section is divided into two parts. In the first part, chi square analyses of student preferences for coeducational or same-sex physical education classes and basketball classes are reported. The second part is descriptive in nature, reporting students' likes and dislikes of coeducational classes.

Student preferences. In the post-questionnaire, students indicated whether they preferred same-sex or coeducational physical education classes as well as same-sex or coeducation basketball classes. They also indicated whether they were as good as, better than, or of the same ability as those of the same gender in their basketball class. Results of chi square analyses for physical education class preference are reported first. Variables of interest in these analyses were: gender of student, grade level, treatment condition (whether they had been in the coeducational or the same-sex basketball class), and ability level compared to other students of the same gender in their class.

An initial chi square analysis revealed that class type preference was not dependent upon gender, X^2 (df = 1, n = 322) = 3.67, p > .05. However, a second analysis showed that class type preference was dependent upon grade of student, X^2 (df = 1, n = 323) = 27.04, p < .001. High school students preferred coeducational classes while middle school students preferred same-sex ones. This finding was true for boys, X^2 (df = 1, n = 159) = 13.73, p < .001, and girls, X^2 (df = 1, n = 163) = 15.08, p < .001. Also, there was a relationship between type of basketball class that the student had participated in and class type preference, X^2 (df = 1, n = 323) = 8.72, p = .003. Those who had been in the coeducational basketball class preferred coeducational physical education classes while those who had been in the same-sex basketball classes preferred same-sex classes. In addition, high school boys who were in the coeducational basketball classes overwhelmingly favored coeducational physical education classes but those who were in the same-sex basketball classes were more evenly divided in their preferences, X^2 (df = 1, n = 72) = 9.80, p = .002. Middle school girls who perceived their ability to be below that of other girls preferred same-sex physical education classes, X^2 (df = 1, n = 75) = 7.15, p = .028. Other than middle school girls who perceived themselves as having less ability, ability was not a factor in class preference.

Preferences for basketball class type were generally parallel to those reported for physical education class preference. Again, class preference was not dependent upon gender, X^2 (df = 1, n = 348) = .367, p > .05. Middle school students preferred same-sex basketball classes while high school students preferred coeducational ones, X^2 (df = 1, n = 350) = 10.34, p = .001. This relationship was significant for boys, X^2 (df = 1, n = 182) = 7.42, p = .006, but did not reach significance for girls, X^2 (df = 1, n = 166) = 3.45, p > .05, although the percentages in each cell for girls were similar to those of boys. Basketball class preference was also dependent upon the type of

basketball class attended, X^2 (df = 1, n = 350) = 28.40, p < .001. Those who attended the same-sex basketball classes preferred same-sex basketball classes while the opposite was true for those who attended the coeducational classes. A break-down of this analysis by grade and gender showed that middle school boys and high school girls preferred coeducational basketball classes only if they had been in the coeducational basketball class. If they had participated in basketball in a same-sex class, they preferred to learn basketball in same-sex classes. High school boys who had been in the coeducational basketball classes overwhelmingly preferred coeducational basketball, whereas those who had been in same-sex classes were equally divided in their preference.

Likes and dislikes of coeducational classes. Besides stating their preferences for either coeducational or same-sex physical education and basketball classes, subjects were asked to comment on what they thought was good and bad about having boys and girls in the same physical education class. A wide range of reasons were identified, but only the ones with large responses are reported here.

Middle and high school girls identified learning from each other and working together as a positive feature of coeducational classes more frequently than any other response (22%). Although this response was also frequent among middle and high school boys (14%), their modal response was making new friends and meeting new people (22%). This response was also among the top responses for the girls (10%). The only other frequent response given by boys was that coeducational classes gave them the opportunity to socialize and to look at the girls (21%). Other top responses among the girls were that there was more competition in coeducational classes (13%), that coeducational classes provided the opportunity to see and interact with students of differing abilities (9%), and that the boys could teach the girls (11%).

When asked what was bad about coeducational classes, the overwhelming response from both high school and middle school girls was that boys took over games, made fun of inferior play, or picked on the girls (49%). This response was also a top response among

high school boys (17%). Girls also listed boys being rougher (12%) as a negative aspect, along with being embarrassed by how they played or looked (12%). Boys, especially middle school boys, thought that other negative aspects of coeducational classes were that skill was unequal, that is, boys were better (25%), and that girls too often complained or did not try hard in class (14%). Middle school boys also noted that students often did not like each other in coeducational classes (14%). The number one response by high school boys (21%) and the number two response by high school girls (13%) was that there was nothing wrong with coeducational classes.

Summary of Post Hoc Analyses

Confidence in Learning Basketball:

1. Boys in coeducational classes were more confident than were girls in coeducational classes.
2. Middle school students were more confident than were high school students.

Usefulness of Basketball:

1. Middle school students perceived basketball as more useful to learn for their future recreational activities than did high school students.

Class Competitiveness:

1. Boys in same-sex classes perceived more overall competition than did girls in same-sex classes.
2. Girls, regardless of class type, perceived less competitiveness among themselves than boys did among themselves.
3. Both genders and grade levels felt that boys were more competitive in coeducational classes than were girls.
4. Girls in coeducational classes rated boys' competitive behavior higher than did boys.

5. Boys and girls in coeducational classes rated the competitiveness of girls similarly.
6. Middle school girls in coeducational classes rated boys as more competitive than did high school girls.

Student Behavior:

1. There was no difference in overall class behavior perceived by boys and girls in coeducational classes.
2. Girls in same-sex classes perceived their classes to be better behaved than did girls in coeducational classes and boys in same-sex classes.
3. There was no difference in perceived class behavior between boys in coeducational classes and boys in same-sex classes.
4. Girls, regardless of class type, perceived themselves to be better behaved than boys perceived themselves to be.
5. Boys and girls in coeducational classes perceived their own gender to be better behaved than did boys and girls in same-sex classes.
6. High school girls perceived themselves to be better behaved than did middle school girls and high school boys.
7. Boys and girls in middle school did not perceive a gender difference in student behavior.
8. Boys in middle school and boys in high school did not perceive a difference in student behavior.
9. Middle school girls in coeducational classes who had a female teacher perceived boys' behavior better than did girls who had a male teacher.
10. Boys in coeducational classes and girls in coeducational classes who had a male teacher felt that girls were better behaved than boys.
11. Middle school girls in coeducational classes taught by a female teacher did not perceive a difference in the behavior of boys and girls.

12. High school girls in coeducational classes who had a female teacher felt that they were better behaved than high school boys.

Class Organization:

1. Girls, regardless of class type, thought that the classes were more organized than did boys.

Affiliative and Helping Behavior:

1. Girls in same-sex classes perceived more overall affiliation and helping behavior than did girls in coeducational classes and boys in same-sex classes.
2. Boys in coeducational classes, boys in same-sex classes, and girls in coeducational classes did not differ in their overall perceptions of affiliation.
3. Girls in both coeducational and same-sex classes perceived themselves as more affiliative than boys in both coeducational and same-sex classes perceived themselves to be.
4. Girls in coeducational and same-sex classes.did not differ in perceptions of their affiliative behavior.
5. Boys perceived themselves to be more affiliative in coeducational classes than in same-sex ones.
6. Girls in coeducational classes felt that girls were more affiliative and helping than were boys.
7. Boys in coeducational classes did not perceive a gender difference in affiliation.
8. Girls in coeducational classes rated themselves higher in affiliation than did boys.
9. Boys in coeducational classes rated boys higher in affiliation than did girls.

Teacher Support:

1. There were no differences among students in perceptions of teacher support given to the class overall.

2. Girls in coeducational and same-sex classes perceived themselves as receiving more teacher support than boys in coeducational and same-sex classes perceived themselves as receiving.
3. Girls in same-sex classes perceived themselves as receiving more teacher support than did girls in coeducational classes.
4. Boys' perceptions of teacher support given to boys did not differ from girls' perceptions of teacher support given to boys.
5. Boys and girls in coeducational classes both felt that girls received more teacher support than boys.
6. Girls in coeducational classes rated teacher support given to girls higher than did boys.
7. The amount of teacher support given to boys in coeducational classes was rated similarly by boys and girls.

Student Involvement:

1. Girls perceived more overall student involvement than did boys.
2. Students in same-sex classes perceived more overall student involvement than did students in coeducational classes.
3. Boys perceived themselves to be more involved in coeducational classes than did those in same-sex classes.
4. Girls in same-sex classes perceived themselves to be more involved than did boys in same-sex classes.
5. Girls did not perceive a difference between their involvement in coeducational classes and in same-sex ones.
6. Boys perceived themselves to be more involved in their classes in middle school than in high school.
7. High school girls perceived themselves to be more involved in their classes than high school boys perceived themselves to be.

8. Middle school boys and girls did not perceive a gender difference in student involvement.
9. Boys and girls in coeducational middle school classes and boys in high school coeducational classes perceived boys to be more involved than girls.
10. High school girls in coeducational classes did not perceive a gender difference in student involvement.
11. Girls in middle school gave boys higher involvement rating than boys gave themselves, while boys and girls in high school gave boys similar involvement ratings.
12. Girls at both grade levels gave girls higher involvement ratings than did boys.
13. Girls in middle school perceived boys to be more involved than did high school girls.

CHAPTER V

Discussion

The primary purpose of this study was to examine the effects of class type (coeducational or same-sex) on students' perceptions of (a) their self-confidence in learning basketball as well as perceptions of the usefulness and gender-appropriateness of basketball, and (b) perceptions of their physical education class environment. Based on an extensive review of the literature examining same-sex and coeducational schools and, more specifically, same-sex and coeducational classes in disciplines such as mathematics and science, it was hypothesized that girls would fare better in same-sex classes and boys in coeducational classes. Specifically, girls' self-perceptions of their confidence in learning basketball, how they sex-typed basketball and how useful they felt basketball was to learn, as well as their perceptions of the environment in which they learned basketball, would be more positive in same-sex basketball classes. Boys, however, would be more confident and perceive a more positive environment in coeducational basketball classes.

To illustrate and summarize the results (especially the class type differences), two narratives follow. Each narrative presents fictitious students constructed to represent the significant findings of the present study. The first narrative concerns boys' feelings about and perceptions of coeducational and same-sex classes; the second highlights girls' feelings about and perceptions of those two kinds of classes. Within each narrative, possible reasons for students' perceptions are considered. Because there were so few grade level differences, the narratives were constructed to represent high school students. When grade level differences arise, comparisons to perceptions of fictitious middle school students are presented. After the narratives, results of the regression analyses are

discussed. Finally, conclusions and directions for future research are provided.

Boys' Perceptions - A Narrative

Curt is a ninth grader in a suburban middle class school attending a required coeducational physical education basketball class taught by Mr. Brown. His friend, Seth, attends the same school and has the same teacher, but participates in a required same-sex (all-boy) physical education class for basketball. Both boys have had similar out-of-school basketball experiences and have just finished participating in a unit of basketball in their respective classes. The boys were asked several questions after the 10-day unit and their answers are summarized below.

Compared to Seth, Curt felt more confident in his ability to learn basketball. In fact, he also felt more confident than his next door neighbor, Carla, who was in the same coeducational basketball class. In physical education, the gender make-up of the class may have a profound influence on students' social comparisons, their self-confidence and, ultimately, their performance. Bandura (1990) contends that people partly judge their capabilities through social comparison and these comparisons exert an important influence on self-confidence. Curt very likely perceived that he had more ability than about half of the students in his coeducational class and perhaps translated that perception into higher self-confidence beliefs than Seth. For Seth, the social comparison process became much more difficult in the all-boy class because the skill level of that class in an activity such as basketball was probably higher than in the coeducational class. In addition, because overall boys perceived basketball to be more useful than girls, and perceived usefulness was found to be a significant predictor of students' self-confidence, the number of students who perceived basketball as being more useful also was higher in the Seth's class than in Curt's. Given these situations, it is no wonder that the Seth found a much tougher social comparison situation on which to base his confidence beliefs than did Curt.

Curt's younger brother, Jason, a seventh grader, also was participating in a

basketball unit. When questioned about his confidence in learning basketball, he and his entire seventh grade class, rated their confidence higher than Curt, Seth, or Carla. This grade level difference supports research that has suggested that younger individuals often report higher self-perceptions of their abilities than older individuals (Lee, Hall, & Carter, 1983; Sanguinetti, Lee, & Nelson, 1985; Ulrich, 1987). One reason for this difference could be that Curt, Seth, and Carla were able to make more realistic appraisals of their abilities than Jason and his classmates.

Both Curt and Seth felt that basketball was more useful for them to learn than did the girls who were participating in either a coeducational or a same-sex basketball class, supporting research in other disciplines that has found boys to perceive masculine activities as being more useful than girls perceive them to be (Fennema & Sherman, 1977; Hilton & Berglund, 1974). Similar to the findings for self-confidence, Jason and his classmates thought that basketball would be more useful to them than did Curt, Seth, or Carla. Perhaps high school students have a more realistic view of what activities they will be able to pursue in the future in relation to their abilities. In addition, Curt, Seth, and Carla may be more involved in a number of different activities than middle school students. To them, basketball may not seem as useful or as important as it once did.

In addition, compared to the girls in these classes, Curt and Seth felt that basketball was more appropriate for boys than did Carla and the other girls in her ninth grade class. In fact, Curt and Seth perceived basketball to be more masculine after the unit than before the unit. However, neither Curt nor Seth really believed that basketball was entirely a boys' sport, rating it less than three on a 5-point scale.

Curt didn't feel that his class was very competitive. Seth, on the other hand, rated his overall class environment as much more competitive than did Curt. Perhaps Seth felt more pressure to play well in same-sex classes and interpreted this as competitive. Alternatively, Seth could also have seen his classes as being more challenging due to the greater number of skilled players than in coeducational classes and interpreted that as competitive. From

the single statement on the overall environment questionnaire concerning competition, one cannot tell how the Seth and Curt interpreted "competition." However, when answering for his own gender, Seth also felt that boys in same-sex classes displayed more competitive behaviors than boys in coeducational classes. Curt, though, felt that the boys in his coeducational class displayed more more competitive behavior than did the girls in his class.

The question of whether competitive behavior is good or bad in physical education class is debatable. If competition is judged as undesirable in a physical education class, then both boys and girls would find coeducational classes more conducive to learning than same-sex ones. Most physical educators and coaches realize the importance of not placing students or athletes in a competitive situation while learning (Wankel, 1984). Accordingly, competition in physical education classes could be counterproductive. Physical education classes that are low in competition (in this study, coeducational classes) might foster the better learning environment. If, on the other hand, competitive behavior is interpreted as trying harder in class, same-sex classes might be considered more beneficial.

Curt and Seth perceived their overall class environment equally in terms of how well-behaved their classes were. However, Curt felt that the boys in his coeducational class were much better behaved than Seth felt about the boys' behavior in his same-sex class. After the unit, Mr. Brown also stated that the boys in his coeducational class were better behaved than the boys in his same-sex class. Perhaps Curt felt that the boys in his class were more well-behaved because the presence of girls had a calming effect on the boys, as some research has suggested (Jones & Thompson, 1980; Schneider & Coutts, 1982). However, Curt and his neighbor, Carla, agreed that girls were better behaved in the coeducational class than were boys.

Curt and Seth also perceived their classes similarly in two other ways. First, they were in agreement about the amount of support that Mr. Brown gave them. This similarity was maintained whether they were asked about the class as a whole or about teacher

support given to just boys in the class. However, Curt felt, as did Carla, that the girls in his coeducational class received more support than he received. This finding contradicts research that generally does not find gender differences in teacher treatment of students in regular classrooms (Eccles & Blumenfeld, 1985). However, Bank, Biddle, and Good (1980) suggested that because boys and girls behave differently, teachers may differentially respond to this behavior. Therefore, the difference in teacher support toward boys and girls, as perceived by Curt and Carla in their coeducational class, may not have been totally unexpected.

Another reason that Curt may have perceived that Carla and the other girls in the coeducational class received more teacher support could have been that girls were given more help in those classes than boys because their skill level was comparatively lower. Horn (1982), in a study examining coaching behavior in softball, found that low-expectancy players (those who the coach perceived as lesser skilled) received more feedback in learning situations (practices) than did high-expectancy players. If Carla and the majority of her female coeducational classmates were lesser skilled, a view that teacher interviews suggested was true, then they may indeed have been given more instruction and thus were seen as receiving more teacher support in relation to the boys. Only future research can determine if this speculation is correct.

Second, Curt and Seth rated the affiliative and helping behavior of their class environments similarly. This attribute is, of course, a desirable one and classes in which students help each other certainly should foster a better learning environment. However, Curt perceived himself as being more affiliative and as giving more help in his class than did Seth in his class. Curt additionally rated his affiliative behavior higher than Carla rated hers in their coeducational class. Two explanations of this finding are possible. First, Curt may have been willing to help other boys in the class. For example, Solomons (1980) noted that coeducational boys in her study gave lesser skilled boys a lot of support and encouragement but did not provide the same encouragement for girls. Because Seth

perceived his same-sex class to be more competitive than Curt perceived his coeducational class to be, the boys in Curt's class may have been more willing to help one another than the boys in Seth's class.

A more likely scenario, though, is that boys perceived girls as needing more help. Therefore, boys (i.e., Curt) rated their helpfulness as higher when girls were present than when they were not (i.e., Seth). The fact that boys probably helped the girls can be supported by the comments in the post-questionnaire. Carla noted on her post-questionnaire that coeducational classes were good because the boys could help the girls learn skills. Furthermore, Curt seemed to enjoy the affiliative aspect of coeducational classes, and he identified making new friends and meeting new people as very important. Future research may benefit from observing student interactions that occur in same-sex and coeducational physical education to see who is helping whom.

Looking at the class as a whole, Seth rated his class as being more involved than Curt rated his class. Interestingly, though, Curt saw himself as much more involved in his class than did Seth. This finding is significant because the amount of involvement one has in a class may be crucial for learning to take place. Interestingly, the findings for student involvement for boys paralleled the findings for self-confidence. Both involvement and self-confidence were lower for Seth than for Curt. Perhaps the lower confidence of Seth and his same-sex counterparts was reflected in their lower perceived involvement. Another explanation could be that Curt was "over-involved" in his class; that is, he participated in the class more than what would have been expected from the percentage (50%) of the boys in his class. This "over participation" could have been a result of Curt's greater confidence than the girls in his class. He may have felt more skilled and found more opportunities to participate. Answers to the open-ended question concerning what was bad about boys and girls participating in the same physical education class showed that Carla's, as well as about half of the girls', responses reflected this perception of over-involvement (e.g., "the boys took over the class").

Curt's younger brother, Jason, felt that he and his classmates participated more in their classes than did both Curt and Seth. The grade level differences in self-confidence and perceived usefulness may have contributed to more perceived class involvement by middle school boys.

Curt, Seth, and Jason were all asked about their preferences for physical education classes and, specifically, for basketball classes. Curt was extremely positive in his feelings about coeducational basketball classes and especially for coeducational physical education classes. This finding was not surprising in view of the social nature of teenagers. Seth, who had been in a same-sex class, was undecided in his preference, especially about basketball class. If he was forced to pick, he said he would choose coeducational physical education, but would choose same-sex basketball classes.

Why was Seth somewhat unsure, then, about his basketball class preference? Curt and Seth were familiar with coeducational physical education classes, as most of their classes previously had been taught coeducationally. Curt, who remained in a coeducational class, may have been influenced in his preference by his past history of coeducation. However, when Seth was given the chance to be in a same-sex class, he preferred same-sex instruction for basketball. Given this new opportunity, he was able to compare that class to the coeducational class with which he was familiar. In this case, for basketball, he preferred same-sex classes.

The preferences of Curt and Seth were almost opposite of Jason, the seventh grader who had attended a coeducational basketball class, and his twin brother, Jeremy, who attended a same-sex class. Jason preferred same-sex physical education classes, but was undecided about basketball classes. Jason's twin brother, Jeremy, attended a same-sex basketball class, and he preferred both same-sex physical education and same-sex basketball classes. This grade level difference is somewhat surprising given the small amount of grade differences found throughout the study. It may suggest, however, that Jason and Jeremy were more sensitive to the gender make-up of their physical education

classes than are Curt and Seth. Early adolescence is a time when boys' and girls' bodies are changing physically and perhaps the inclusion of the opposite sex in a class where these changes are most noticeable is awkward. The movement toward coeducational physical education was motivated by a desire for equal opportunity and driven by the idea that boys and girls should be able to participate together. Coeducation may arguably be able to minimize differences in participation; it cannot, however, minimize or hide differences in physical changes. Nowhere are these differences illuminated more than in a physical education class at the middle school level. The fact that Jason and Jeremy generally preferred same-sex classes should not be ignored.

Overall, results suggest that boys felt more confident and perceived a more positive environment in coeducational classes. This finding was similar for boys regardless of grade level. However, although perceiving coeducational classes favorably, boys in middle school generally preferred same-sex classes. Results, then, in support of much of the educational literature, strongly suggest that boys will likely benefit from coeducational classes.

Girls' Perceptions - A Narrative

This narrative presents perceptions of fictitious students whose perceptions represent the average girl's feelings about coeducational and same-sex physical education classes. The two primary subjects in this narrative are Carla, Curt's coeducational counterpart, and Sally, who participated in a same-sex (all-girl) basketball class. Like Curt and Seth, they are ninth graders from similar middle class backgrounds and have had similar basketball experience. Carla's teacher is Mr. Brown, while Sally's teacher is Ms. Bilsing.

When questioned about their self-confidence for learning basketball, Sally was somewhat more confident than Carla. However, the difference in confidence between Sally and Carla was not as great as the difference between Curt and Seth. One can only speculate as to why there were only small differences in the confidence levels of girls in

same-sex and coeducational classes. Perhaps Carla and Sally simply did not care as much about basketball as Curt and Seth and, therefore, the effects of class type on girls were not as strong as the effects on boys. However, about the same percentage of boys (74%) as girls (73%) rated basketball at least somewhat important to learn in class, suggesting the importance one placed on learning basketball was not a primary factor for the differences.

Ewing (1981) found that, for boys, success was defined in terms of skill; for girls, trying one's best signified success. Perhaps girls in both types of classes were trying their best. Because girls may judge success by effort, the self-confidence of Carla and Sally may have been built upon similar effort and, consequently, confidence levels of the two girls were not much different from each other.

As stated previously when discussing boys' perceptions, Carla felt much less confident than Curt who was participating in the same basketball class. Perhaps Carla defined success differently from Curt and, therefore, may have based her confidence beliefs on a different sense of performance accomplishment. Attribution researchers have found that girls often attribute successes to luck while boys attribute their successes to skill (McHugh, Duquin, & Frieze, 1978). If Carla was successful in her coeducational class, she may have attributed that success to luck. This reasoning may explain the gender difference in self-confidence between boys and girls in coeducational classes. Another reason could simply be that the ability difference between boys and girls was apparent in coeducational classes. Curt may have felt more confident than Carla because he could see that he was more skilled in basketball. However, in the same-sex classes, Sally's self-confidence score was slightly higher than Seth's score. If girls attribute success to luck, and use those attributions to form confidence beliefs, Sally should also have been less confident than Seth. This was not the case, suggesting that comparison with other students in the same class has a powerful influence on self-confidence beliefs. In future research, the question of how boys and girls determine their confidence beliefs should be examined. There may very well be age differences as well as gender differences in the processes that

individuals use to determine their self-confidence in an activity.

Both Carla and Sally have sisters (Brooke and Linda) in middle school. Brooke and Linda, like Jason, felt more confident than their older siblings. And like Jason, they also believed that basketball would be more useful to learn for their future recreational endeavors. All the girls, however, perceived basketball as less of a masculine activity than did Curt, Seth, and Jason, viewing basketball as definitely appropriate for girls. This last finding supports research in mathematics education where girls have been found to perceive mathematics as less masculine than boys (Sherman & Sherman, 1977; Sherman, 1982a).

Carla and Sally perceived overall class competitiveness similarly. However, Sally felt the girls in her same-sex class were more competitive than Carla did about the competitiveness of the girls in her coeducational class. The presence of higher skilled performers (in this case, boys) did not affect Carla's perceptions of the competitiveness of her class. Perhaps the presence of boys and girls in the same class diminished Carla's perception of the competitive level of the coeducational class because the skill level of students was so disparate.

Sally perceived her class as more well-behaved than did Carla. Like Curt, though, Carla rated girls' behavior in her coeducational class higher than Sally rated girls' behavior in her class. Carla and the girls in her coeducational class may have seen themselves as better-behaved than Sally's class because they compared their behavior to the boys in the class and determined that they were better behaved. The fact that Sally perceived better behavior overall in her same-sex class than did Carla in her coeducational class suggests that Carla may have believed that the presence of boys in her class eroded student behavior in that class, at least in comparison to Sally's all-girl class, and that in comparison to boys, girls were better behaved. In support of this, Carla felt that the girls' behavior in the coeducational class was better than the boys' behavior in that same class. Curt agreed with this perception.

In terms of teacher support, Carla and Sally did not differ in their perceptions of the

amount of support that Mr. Brown and Ms. Bilsing gave to their respective classes. Most likely, these girls judged overall teacher support in coeducational classes by including teacher support given to boys. Some educational research shows that boys receive more teacher attention, even though some of that attention may reflect the teacher's response to boys' negative behavior (Brophy, 1985; French & French, 1984). Carla may have identified this attention as teacher support. However, when Carla and Sally responded for their own gender, a discrepancy appeared. Sally felt that Ms. Bilsing offered more support to the girls in her same-sex class than Carla felt that Mr. Brown gave to the girls in her coeducational class. Sally's friend, Jane, participated in Ms. Bilsing's coeducational physical education class. Sally also rated Ms. Bilsing's support to girls in her same-sex class higher than did Jane in her coeducational class. Unlike perceptions of student behavior, perceptions of teacher support for one's own gender may be more important than perceptions of teacher support given for the entire class. In this case, girls seemed to fare better, at least in terms of perceptions of teacher support, in same-sex classes.

Sally believed that her class was more affiliative and helping than Carla believed her class to be. However, Carla and Sally did not differ in perceptions of affiliation displayed by girls. These findings suggest that girls considered themselves as engaging in the same amount of helping behaviors regardless of the class in which they participated. However, when boys were present, the perception of class affiliation was not as strong as in same-sex classes. Sally also felt her same-sex class was much higher in affiliation than Seth felt about his same-sex class. Both Carla and Sally felt that the girls in their classes displayed more affiliation and helping behavior than Curt and Seth felt boys did. Although Curt believed that boys in his coeducational class were more affiliative than the girls, Carla disagreed. She felt that girls were more helpful than boys in coeducational classes. As stated previously, these discrepancies could be examined by observational research to determine what overt behaviors are actually occurring.

Carla and Sally rated overall student involvement in their classes higher than did Curt

and Seth. That is, the girls rated student participation higher than did the boys. Carla and Sally rated involvement of girls in their classes similarly. In other words, girls did not perceive themselves as participating to a lesser extent in coeducational classes than in same-sex ones. However, unlike the boys, Carla's and Sally's ratings of high school girls' involvement was similar to Brooke's and Linda's ratings of middle school girls' involvement. In this case, the higher self-confidence and higher perceived usefulness of basketball reported by Brooke and Linda did not lead to a difference in perceptions of class involvement between middle school and high school girls as it did for boys.

When asked her class type preferences, Sally was not sure about her physical education class preference but hesitatingly decided upon coeducation. For basketball, however, she strongly preferred same-sex classes. Similar to Seth, having been given the opportunity to participate in a same-sex class, Sally found that she liked same-sex instruction. Carla strongly preferred both coeducational physical education classes and basketball classes. Having been accustomed to a coeducational class, Carla, like Curt, was not given the opportunity to compare classes, and her preferences may have reflected this situation. Brooke and Linda preferred same-sex physical education classes, especially Linda who had been in a same-sex class. Linda also preferred same-sex basketball classes, while Brooke was unsure. Brooke's and Linda's preferences were similar to Jason and Jeremy's, probably for similar reasons described earlier.

Overall, for girls, class type differences were apparent when girls considered the entire class. For example, girls in same-sex classes thought that their classes were more involved, more affiliative, and better behaved than did girls in coeducational classes. However, no significant class type differences in perceptions of girls' behavior appeared in those three areas. Conversely, girls felt that they received more teacher support in same-sex classes than did girls in coeducational ones. Girls also rated girls as more competitive in same-sex classes than in coeducational ones. Finally, girls tended to be more confident in same-sex classes than in coeducational classes. In summary, girls

appear to view same-sex classes more favorably than they view coeducational classes.

Predictors of Self-confidence

An important purpose of this experiment was to investigate factors that may influence boys' and girls' perceptions of self-confidence. Not only can the type of class in which boys and girls learn physical skills influence self-confidence, but so can perceptions about the type of activity such as usefulness, gender-appropriateness, and competitiveness. How useful and how masculine one considers basketball to be and how competitive the class was perceived were hypothesized to be significant predictors of self-confidence for learning basketball. Results of the regression analyses indicated that perceived usefulness was the strongest predictor of self-confidence for learning basketball. This finding supports research in mathematics education that has found self-confidence for mathematics to be higher in individuals who perceived mathematics as more useful to learn than in individuals who perceived it as less useful (Rowe, 1988; Sherman, 1981, 1982b). As hypothesized, class competitiveness was also a predictor of self-confidence. However, this finding was true only for boys. Boys who perceived a smaller amount of class competitiveness were more confident than boys who perceived greater amounts. Perhaps highly self-confident boys perceived less class competitiveness because they were higher in ability.

For girls, several significant predictors of self-confidence for learning basketball emerged. Like boys, usefulness of basketball was the strongest predictor, accounting for 48% of the variance by itself. The second strongest predictor of self-confidence was perceived gender-appropriateness of basketball. As hypothesized, girls who thought basketball was more appropriate for boys were less confident than those who sex-typed it as less masculine. This result corroborates research in mathematics (Rowe, 1988; Sherman & Fennema, 1977) and physical education (Lirgg, in press). Another predictor of self-confidence found only for girls was the number of sports in which one participated. Girls who participated in more sports were more confident than less frequent participants.

Because girls may not take the opportunity to compete in sports in their neighborhoods, those who were given the opportunity to participate on teams may have used these opportunities to become more confident. Of course, high confidence may have been the reason that these girls chose to participate on teams originally. Weaker, but significant, predictors of self-confidence were the amount of teacher support perceived to be given the class and the importance one placed on learning basketball. Correlational analyses showed that importance placed on learning basketball in class was significantly related to how useful girls thought basketball was ($r = .52$) but was less strongly related to how girls sex-typed basketball ($r = .26$). For girls, then, high confidence in a sport activity such as basketball may be related to several different influences.

Although this experiment was not designed to test the Fennema and Peterson (1985) model of mathematics achievement presented in Chapter 1, results of these regression analyses lend some support to the first part of the model which suggests that external factors influence internal beliefs about achieving. The external factors of perceived class competitiveness and teacher support in the present study were significant predictors of self-confidence for boys and girls respectively. Future research should examine the influence of external factors, such as class environment, on autonomous learning behavior and the influences of external factors on motivational factors as a mediator of autonomous learning behavior. For example, class type may affect persistence and activity choice (autonomous learning behaviors) directly or it may exert its influence through self-confidence as a mediating factor on those autonomous learning behaviors.

Conclusions and Future Directions

In conclusion, the results of this study should be examined in a practical light. Although boys tended to view coeducational classes more favorably than same-sex ones, and the opposite might be true for girls, it is simply not possible to have all boys in coeducational classes and all girls in same-sex classes. However, in view of the fact that

some students preferred coeducational classes and some same-sex ones, perhaps giving students in middle school as well as high school the option of choosing in which class they prefer to learn would be a fair solution.

For girls, how one sex-typed basketball was related to self-confidence for learning basketball. Also, for both girls and boys, how useful they perceived basketball to be was the strongest predictor of self-confidence. Future research should explore the antecedents and consequences of perceptions of self-confidence, perceived usefulness, and perceived gender-appropriateness of activities, especially in relation to girls' choices of those activities in a physical education or sport context.

Researchers should also examine the direct links between the self-perception variables on achievement in physical education in order to determine where interventions could be made. For example, is perceiving basketball as useful to learn, or perceiving it as a masculine sport, a cause or an effect of self-confidence in basketball? Is perceiving basketball as useful necessary for high self-confidence in basketball? For girls, is sex-typing basketball as masculine an outgrowth of not being confident in basketball or is it a cause of lack of confidence? If the latter is the case, steps should be taken to "demasculinize" basketball or any other sport that may be interpreted as such.

What effect does the environment actually have on students? The present study highlighted several class type differences in perceptions of the environment, but future studies should investigate the outcomes of each environment. Some of these outcomes may be performance-oriented; another outcome examined could be the kinds of activities in which one chooses to become involved. Because much of sport and physical activity is undertaken by individual choice, does the learning environment influence future activity choice? What effect does self-confidence have on activity choice? Bandura (1986) suggested that self-confidence plays a vital role in choice of activities. Research in the academic domain (e.g., mathematics education) certainly supports Bandura's claim; researchers should investigate how strong an influence self-confidence has on activity

choices in the physical domain and if the learning environment also mediates activity choice.

Many of the questions raised in this experiment may need to be examined qualitatively. Observational research, such as that undertaken by Griffin (1983, 1985a, 1985b) and Solomons (1980) provide a starting point. Also, a collaboration of quantitative and qualitative researchers may be quite well suited for research in this area. Will the results of qualitative research corroborate the quantitative findings? This type of collaboration would be especially useful in research on class environment. For example, will observational or interview research support the findings of the present study that all-girl classes are more affiliative than coeducational or all-boy classes, that coeducational classes are less competitive than all-boys classes, or that girls receive more teacher support in all-girl classes than in coeducational ones?

This study brings to light several other directions for future research. One limitation of the present study was that it examined only one physical education unit -- basketball. Boys and girls may view other sport skills differently. Basketball is considered an interactive sport. Players must combine various skills through interdependent action to achieve the group goal. Different effects might be found in sport activities that are coactive (e.g., golf or archery) and do not require coordinative action between individuals for performance success. Perhaps in coactive sports, comparisons with others in the class may not be as salient as when students are participating in teams or group drills. In addition, some sports and activities other than basketball require agility, balance, and grace instead of strength and power. In these activities, peer comparisons of such attributes may produce different results than those found in the present study. Therefore, this research should be extended to examine other sport skills, especially those that are individual or coactive. Similarly, examining how boys feel in an activity that is perceived as more feminine-appropriate than masculine may provide opposite results to those found in the present study.

One feature that was not examined in the present study was the basketball ability level of the students. Using random assignment to classes assumed that ability level was distributed evenly by gender throughout the classes. However, ability probably also influenced self-confidence and if ability had been included in the regression analysis, the percentage of the variance explained may have increased. Additionally, how ability interacts with class type and gender is a topic that should be considered by future research.

If possible, researchers should attempt to set up situations where students are taught either coeducationally or segregated for an entire school year. The present study found differences after only 10 days in a unit. Although this fact is significant given that earlier research examining performance during units of similar length found little class type differences, the question remains as to whether the perceptions of the students in the present experiment would remain over time. Because the students in the present study were chosen from schools who had coeducational physical education, the novelty of a same-sex class may have contributed to some of the differences. Experiments conducted over a longer period of time could examine that premise.

A further direction for research could be to examine actual achievement behavior as described in the Fennema and Peterson model. Other aspects of the coeducational/same-sex environment, such as opportunities to handle the ball, student interactions, skill level, and flow of play, should be investigated as to their affects on achievement. In addition, path analyses or causal model designs could be implemented to determine the direction and strength of external and motivational influences on achievement behavior.

Achievement should not necessarily be defined as an immediate outcome (i.e., skill level attained after one instructional unit). The present study purposely did not examine skill level differences between students in coeducational and same-sex classes because little or no differences have been found in the past. However, examining factors that may affect effort and persistence, such as class environment and self-confidence, should ultimately

provide answers to achievement differences between boys and girls. Therefore, while outcome should not be ignored, achievement should not be limited to such indicators as, for example, the number of lay-ups a student can make in 30 sec.

An original intent of this study was also to examine perceptions of elementary-aged students. This intent proved to be difficult to carry out and was eliminated. However, the importance of learning skills and developing positive attitudes early for sport and physical activity falls predominantly on the elementary physical education programs. Historically, elementary physical education has been coeducational. Investigating the effects of same-sex elementary physical education may be worthwhile. Along this same line, it may also be worthwhile to investigate the advantages or disadvantages of young children's participation in coeducational or same-sex recreational sports (e.g., soccer leagues). If research shows that coeducational teams may not be in the best interest of all children, at what age should recreational teams be same-sex? Researchers could begin by examining percentages of participants and drop-outs of boys and girls in coeducational sports at various age levels.

The results of the present study suggest that educational reform, such as Title IX, should be monitored by researchers in order to determine its varying effects on children. Little research was conducted before implementing coeducational classes; the same mistake should not be made concerning the assessment of coeducational classes. Coeducational physical education classes may very well be the best type of class for children. However, without research examining all aspects of same-sex education and coeducation (i.e., how each class type affects students not only in terms of performance but also psychologically), the best physical education situation may not be clearly identified.

APPENDIX A

Self-confidence for Learning Basketball Scale, Usefulness of Basketball Scale, and Gender-appropriateness of Basketball Scale

Code number_____

Circle one: Male Female

Please circle the number that matches how you feel right now about each question.

(CODE: C = Confidence Scale, U = Usefulness Scale, G = Gender-appropriateness Scale

C 1. Generally, I feel confident about attempting skills in basketball.

1	2	3	4	5
strongly disagree	**disagree**	**not sure**	**agree**	**strongly agree**

U 2. It's good to know how to play basketball so that I can play it in my free time.

1	2	3	4	5
strongly disagree	**disagree**	**not sure**	**agree**	**strongly agree**

G 3. I would have more faith in letting a boy make an important play in basketball than a girl.

1	2	3	4	5
strongly disagree	**disagree**	**not sure**	**agree**	**strongly agree**

C 4. I'm no good in basketball.

1	2	3	4	5
strongly disagree	**disagree**	**not sure**	**agree**	**strongly agree**

U 5. Basketball skills will not be important for me to use in my free time.

1	2	3	4	5
strongly disagree	**disagree**	**not sure**	**agree**	**strongly agree**

G 6. Learning basketball is just as appropriate for girls as it is for boys.

1	2	3	4	5
strongly disagree	**disagree**	**not sure**	**agree**	**strongly agree**

C 7. I have a lot of self-confidence when it comes to basketball.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

U 8. I will probably play basketball many times as I grow up.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

G 9. Girls are certainly coordinated enough to do well in basketball.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 10. I don't think I could do harder skills in basketball.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

U 11. I see basketball as a sport I will rarely play in my free time as I get older.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

G 12. When a girl plays a boy in basketball, it is feminine to let the boy win.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 13. I am sure that I can learn basketball skills.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

U 14. I learn basketball now because I know how useful it will be later in life.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

G 15. I would trust a girl just as much as I would trust a boy to make an important play in basketball.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 16. I'm not the type of person to do well in basketball.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

U 17. Learning basketball is a waste of time.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

G 18. It's hard to believe that a girl could be a great player in basketball.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 19. I think I could handle more difficult basketball skills.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

U 20. Knowing basketball will help me enjoy my free time.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

G 21. Basketball is for boys; cheerleading is for girls.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 22. For some reason, even though I try, basketball seems really hard for me.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

U 23. When thinking about my adult life, it is not important for me to learn basketball skills.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

G 24. Girls can do just as well as boys in basketball.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 25. I can do well in basketball skill tests.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

U 26. Basketball is a worthwhile sport to learn.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

G 27. I would expect a girl basketball player to be a masculine type of person.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 28. Some sports I can handle O.K., but I usually mess up in basketball.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

U 29. I expect to make little use of my basketball skills when I get out of school.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

G 30. Boys are not actually better than girls in basketball.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

APPENDIX B

Overall Class Environment Scale

Code Number_____ **Male** **Female**

A. How well-behaved were the students in your basketball class?

1	2	3	4	5	6	7	8	9	10
not behaved at all									very well behaved

B. How much competition was there among students in your basketball class?

1	2	3	4	5	6	7	8	9	10
none									a lot

C. How much support and help did your teacher give to the students in your basketball class?

1	2	3	4	5	6	7	8	9	10
none									a lot

D. How well did the students in your basketball class get along with and help each other?

1	2	3	4	5	6	7	8	9	10
very poorly									very well

E. How involved were the students in your basketball class? (Did students participate a lot ?)

1	2	3	4	5	6	7	8	9	10
not at all involved									very involved

F. How much did the students in your class enjoy this basketball class?

1	2	3	4	5	6	7	8	9	10
not at all									very much

APPENDIX C

Gender-specific Class Environment Scale

Code number_____

Circle one: **MALE** **FEMALE**

Circle the number that matches how you feel right now about your P.E. class.

(CODE: Q = Class Organization, C = Class Competitiveness, T = Teacher Support, A = Affiliation and Helping Behavior, I = Student Involvement, S = Student Behavior)

Q 1. Activities in this class are planned so that everyone has an opportunity to try.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 2. The girls don't usually try to "show-off" in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

T 3. If the girls want to talk about something in this class, this teacher will find time to do it.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

A 4. It's easy to get the girls to cooperate on teams in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

I 5. A lot of the girls seem to be only half awake in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

Q 6. This class hardly ever starts on time.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 7. During games in this class, many of the girls are upset if their team doesn't win.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

T 8. This teacher does not trust the girls in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

A 9. A lot of the girls in this class don't like other students in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

I 10. The girls in this class really enjoy this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

S 11. Drills and games in this class are usually clear so everyone knows what to do.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 12. Some of the girls try to "hog the ball" in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

T 13. This teacher gives extra help to girls in this class who need it.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

A 14. There are groups of the girls who don't get along with other students in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

I 15. The girls sometimes do extra practice on their own in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

S 16. The teacher in this class often has to tell the girls to calm down.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 17. The girls can play as hard as they want in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

T 18. This teacher treats the girls in this class as if they were children.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

A 19. The girls don't have much of a chance to get to know other students in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

I 20. The girls in this class work hard in practicing their skills.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

S 21. The teacher in this class hardly ever has to tell the girls to keep working on the activity.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 22. The girls try hard to win their games in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

T 23. Sometimes the teacher embarrasses the girls in this class for not being very good or for making a mistake.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

A 24. The girls in this class enjoy helping other students learn skills.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

I 25. A lot of the girls just stand around in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

O 26. This class is often in an uproar.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 27. The girls in this class don't really care whether the other students in this class are very good players or not.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

T 28. The teacher goes out of her way to help the girls in this class .

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

A 29. The girls in this class enjoy playing with all the other students on teams in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

I 30. Very few of the girls take part enthusiastically in class activities.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

S 31. The girls fool around a lot in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 32. The girls don't compete with other students to show who's best in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

T 33. The teacher of this class is more like a friend than an authority.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

A 34. The girls in this class have a lot in common with the other students in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

I 35. Most of the girls in this class really pay attention to what the teacher is saying.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

S 36. The girls are almost always well-behaved in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 37. The girls in this class try hard to demonstrate the highest skill.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

T 38. The teacher takes a personal interest in the girls in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

A 39. The girls aren't very interested in getting to know all the other students in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

I 40. The girls in this class often can't wait for this class to end.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

Q 41. This is a well-organized class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 42. The girls don't feel pressured to do better than other students in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

T 43. This teacher spends very little time just talking with the girls in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

A 44. The girls in this class get to know other students in this class really well.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

I 45. The girls put very little energy into what they do here in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

S 46. The girls in this class often interrupt the teacher when she is talking.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

C 47. A lot of the girls in this class get upset when teammates don't play well or make a mistake.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

T 48. This teacher in this class likes the girls with more ability better than the girls who aren't as good.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

A 49. The girls rarely call the other students by their names in this class.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

I 50. Most the girls in this class really pay attention to what the teacher is saying.

1	2	3	4	5
strongly disagree	disagree	not sure	agree	strongly agree

APPENDIX D

Parent Letter and Parent Consent Form

Parent Letter

BASKETBALL STUDY

Dear Parent:

As part of the requirements for my doctoral degree in physical education, I will be investigating students' perceptions of their physical education classes during a unit of basketball. Specifically, I am interested in examining factors that may affect their motivations to learn physical skills.

We would like to ask your child if she/he would be willing to participate in this study. We are requesting your permission of your child's participation.

Students will be asked to fill out questionnaires about basketball and their physical education class both before and after a basketball unit taught by their school's physical education teacher. Code numbers will be used to insure confidentiality. Only the experimenter will have access to the answers provided by the students. Your child's physical education instructor will NOT be involved in any way with the data collected.

Enclosed is a parental consent form that we would like you to complete. This form provides a summary of your child's rights as a participant in the study. Please read the form carefully and keep in mind that your child will also be informed of his/her rights as a participant in the study. Your child's performance will be kept strictly confidential and his/her identity will remain anonymous. There is no penalty if at any time you decide not to permit your child to participate in the study or if your child decides not to continue participation in the study. If you approve of this study's objectives, permitting your child to participate will help us in our efforts tremendously. Please sign the form and send it to school with your child. If you have any further questions, please feel free to contact us.

We are grateful for your help.

Thank you,

Cathy D. Lirgg, M.S.
Experimenter
353-0892

Deborah L. Feltz, Ph.D.
Supervisor
355-4732

Parent Consent Form

Department of Physical Education
and Exercise Science

Michigan State University

_____ has my permission, as a
(Student's Name)
legal parent or guardian, to participate in the "Basketball Study" conducted by Cathy Lirgg, under the supervision of Dr. Deborah Feltz. I have received and understand the following information concerning the study:

1. The study has been explained to me. I understand the explanation that has been given and what my child's participation will involve.

2. I understand that my child's participation is completely voluntary.

3. I understand that my child is free to discontinue her/his participation in the study at any time without penalty.

4. I understand that the results of the study will be treated in strict confidence and my child's responses will remain confidential. Within these restrictions, results of the study will be made available to me at my request.

5. I understand that, at my request, I can receive additional explanation of the study after my child's participation is completed.

6. I understand that if injury occurs during this research project, any medical expenses must be paid from my own health insurance.

_____
Parent or Guardian Signature

_____
Phone

_____
Date

LESSON: Day (1) 2 3 4 5 6 7 8 9 10 FOCUS: Ball handling, Dribbling Lay-ups

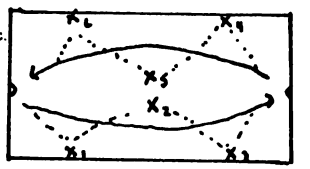
Date _____ Instructor _____

School HIGH SCHOOL Class: COED MALE FEMALE

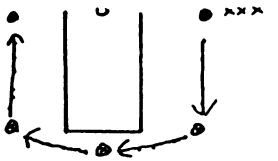
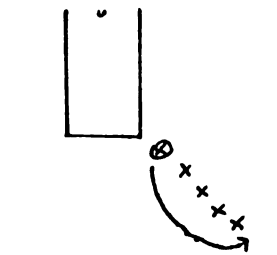
Place a checkmark by all activities that you covered. If you did something different, please note that on this sheet. It is very important that both coed and single-sex classes be taught the same material, even if for some reason you deviate from the scheduled lesson. However, please try to follow the lesson, even if something doesn't work in the first class.

Time	Activity	Drill or Game	Formation	Key Points
15-20 min.	Attendance Warm-ups, Fitness	Choice		
5-7 min.	Ball-handling	Circles around neck, waist, ankles - 5 times corkscrew - combination Figure-8's around ankles both directions 5 times Figure-8 dribbling both directions 5 times	Scatter (in partners or 3's if not enough balls)	
4 min.	Dribbling	Reverse Dribble dribble down with right hand turn toward ball to reverse dribble dribble back with left hand	Line formation	
2 min. 7 min.	Lay-ups	Explanation 2-line drill one line shoots, one rebounds Both right and left handed lay-ups	Dual line formation	Stress proper foot plant
5 min.		Russian lay-ups same as regular lay-ups only go to opposite line at opposite end of gym		This is a good fitness activity - stress sprinting to opposite end
5 min.		Minute lay-ups one team lines up, each with a ball. On "go", first person takes off and dribbles to opposite end and back. Shoot lau-up at both baskets. Stagger start but players can go as fast as they can after that. Teacher times one minute (or longer if you choose)		Only 1 shot per person per basket - opposing team counts out loud
	Rules	Traveling, Double dribble		

LESSON: Day 1 (2) 3 4 5 6 7 8 9 10 FOCUS: Passing HIGH SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
15-20 min.	Attendance Warm-ups, fitness	Choice		
5 min.	Ball Handling	Corkscrew - 5 times Switch drill - Hold ball between ankles; one hand behind one leg, the other in front of the other leg. Switch hands without letting ball touch floor - 10 times Butterfly - keep ball bouncing between legs by dribbling in front and behind legs alternately - 30 seconds		
5 min.	Dribble Review	Dribble around obstacles • First, students in line do nothing • Second, students in line try to knock ball away, but both feet must be planted • Third, students in line can try to knock ball away but keeping only 1 foot planted	Use 4 students in a line as "cones" 	Stress switching hands to protect ball with opposite arm
2 min. 3 min.	Passing	Explanation of passes - stationary passes Chest pass down court with partner Bounce pass down court with partner	Two lines about 7 yard apart	Pass in front of moving player Keep elbows in Bounce should be made about 3/4 distance to target
5 min.		Three-player weave with lay-up	Three lines	Go behind player you passed to Start ball in middle; pass ahead of player
7-10 min.		Passing Lay-ups - players start under one basket. They run straight down court but pass to X_1, X_2, X_3, etc. and receive pass back. Lay-up is made at both ends. Second player goes when first pass back to first player is completed 		Stress running in a straight line Emphasis is on the passers to pass well to a moving player X3 & X4 need to give good passes for a lay-up

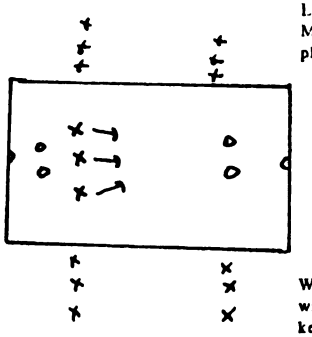
LESSON: Day 1 2 (3) 4 5 6 7 8 9 10 FOCUS: Shooting HIGH SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
15-20 min.	Attendance Warm-ups, fitness	Choice		
3 min.	Ball Handling	Dribble figure 8 Butterfly		
3 min.	Shooting	Explanation and demonstration of one-hand set shot, jump shot		
5 min.		Practice - let students work in groups of 3 to work on form	groups of students at each basket 	Stress helping each other and point out errors
7 min.		Around the world - divide into teams; designate 5 shooting spots. All players on each team must make a basket at a spot before moving to next spot. 1st team finished sits down behind basket.		Start groups using same basket at opposite spots - Rebound own shot Make sure groups are even and coed Everyone shoots when it's their turn even if they've already made it.
5-10 min.		Shuttle relay - students shoot in turn and rebound their own shot, then go to back of their line. Next shooter shoots, etc. First team that makes 10 baskets sits down in a line. Every time a basket is made, the team calls out the # so that everyone knows how everyone else is doing. Teacher designates spots to shoot from (1 spot per relay). Relay can be repeated from several different spots.	single-file lines at each basket 	Stress good passes back to shooter and quick shot after pass. Hustle after rebound

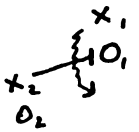
LESSON: Day 1 2 3 (4) 5 6 7 8 9 10 FOCUS: Individual defense HIGH SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
15-20 min.	Attendance Warm-ups, fitness	Choice		
2 min.	Defensive stance	Explanation & demonstration	Group	
4 min.		Slides - move down court using good form - use as many groups as there is room	probably 1 or 2 lines	Stress staying low, keep feet apart during slide; good hand/arm position
6 min.		Guarding dribbler - dribbler dribbles slowly in a zig-zag pattern; defensive player uses feet only (place hands behind back) to stay in front of dribbler	same as before 	Stress staying low - not hopping up and down, not crossing feet
6 min.		Same drill - use correct arm positioning this time, but do not steal ball		
remaining time	Game play	3 on 3 or 4 on 4 - when 1 team loses ball or shoots, misses, and does not get rebound, the team sitting out replaces them. If a team scores, it stays on offense & defense is replaced. When defense gets ball, they go to offense.	3 teams to a basket	Player defense - individual technique
	Rules	Blocking, charging, legal guarding position		

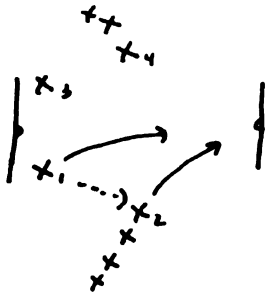
LESSON: Day 1 2 3 4 (5) 6 7 8 9 10 FOCUS: Player defense - (team) HIGH SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
15-20 min.	Attendance Warm-ups, fitness	Choice		
15 min.	3 on 2	11 - player (11- man) Set up in starting formation. 3 players on offense bring ball down court. After shooting and missing rebound or scoring, 2 of those 3 stay on defense at that end. Defensive player that rebounds ball or gets ball after a made basket is middle player in new 3 on 2. First players from each near sideline are the outside offensive players. Repeat going the other way. Offense keeps shooting at basket until losing ball or making a basket		Look for open player (3 on 2) Make defense commit to center player
5-7 min.	Player defense	Explanation: sagging, helping out, blocking		
remainder of class	Game play	4 on 4		Watch for students guarding a player without the ball who is not near the key. Point out situations when players can leave their own offensive player to "help out"
	Rules	Lane violations, back court, held ball		

LESSON: Day 1 2 3 4 5 (6) 7 8 9 10 FOCUS: Offensive moves HIGH SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
15-20 min.	Attendance Warm-ups, fitness	Choice		
5 min.	Review drill	Any drill not done previously or, if all have been done, one of your choice		
3 min.	Offensive moves	Explain: Head fake or shot fake - then drive Jab step and shot Have students stand and practice without ball	Group	Make fake believable
7 min.		Practice - allow students to practice these moves with a ball and a partner	with partner 3 or 4 partners at a basket	Discourage a lot of dribbling Make move and either drive or shoot; encourage students to begin by playing "dummy defense" at first
5 min.		Explain pick; pick and roll	Group	
5 - 7 min.		Practice - groups of 4; set up situations so that everyone can practice both the pick and the pick and roll		Use "dummy defense" - make sure "pickee" brushes shoulders with "picker." Stress proper pick position - no moving once set
remaining time	Game play	4 on 4		Moving without ball; setting picks off ball

LESSON: Day 1 2 3 4 5 6 (7) 8 9 10 FOCUS: Rebounding HIGH SCHOOL

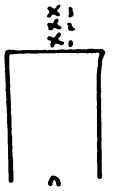
Time	Activity	Drill or Game	Formation	Key Points
15-20 min.	Attendance Warm-ups, fitness	Choice		
5 min.	Rebounding	Explain: blocking out, correct form, outlet pass	Group	Get between basket and opponent Touch (contact) opponent Jump to get rebound Make yourself big - take up space
5 min.		Rebound, pass, lay-up drill - teacher throws ball onto backboard. X_1 rebounds and throws to X_2. X_1 & X_2 pass back and forth down the court and shoot lay-up at the other end. When fist group is at half-court, start X_3 & X_4		
remainder of class	Game play*	5 on 5		

*If this section seems too long, run a shooting drill, Russian lay-ups, or 11-player at the end of class.

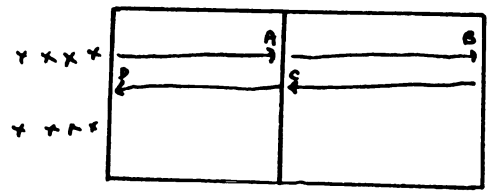
LESSON: Day 1 2 3 4 5 6 7 (8) 9 10 FOCUS: Zone defense HIGH SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
15-20 min.	Attendance Warm-ups, fitness	Choice		
5-7 min.	Review 3 on 2	11-player drill	See Day 5	
15 min.	Zone defense (2 - 1 - 2)	Explanation: position requirements, differences between zone and player	Use students to demonstrate - Pass ball around slowly while while you move defense	Move as a group on every pass Keep in close - in key
		Practice - make sure students get to practice all defensive positions		
Remainder of class		Game play - have 1 team practice defense for several consecutive times; then switch	2 or 3 teams of 5 at a basket	Talk a little about a post player so that guarding that player can be incorporated into defense. Remind about lane violations.

LESSON: Day 1 2 3 4 5 6 7 8 (9) 10 FOCUS: Game play HIGH SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
15-20 min.	Attendance Warm-ups, fitness	Choice		
5 min.	Review	Passing lay-ups - see Day 2		
20 min.	Game play	5 on 5 Allow students to change defenses when they want - play game to 10, switch teams to different baskets	Divide class into equal teams Coed classes must have coed teams	
5 min.	Shooting	Bump - each group is in shuttle formation at the foul line X_1 shoots a foul shot. If basket is missed, get rebound and shoot lay-up until made. After X_1 shoots foul shot, X_2 immediately shoots. X_1 must make basket before X_2 or he/she gets a point. 5 points and you are out.	Each group at a basket plays its own game 	

LESSON: Day 1 2 3 4 5 6 7 8 9 (10) FOCUS: HIGH SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
15-20 min.	Attendance Warm-ups, fitness	Choice		
15-20 min.	Squad contests	Shuttle relay - see Day 3		Make equal and coed squads
		Dribble/ball handling relay - a) dribble to half-court, do 5 waist circles with ball b) dribble to end of court - do 5 circles around ankles c) dribble to center court, do 5 figure-8's right and left d) dribble to start line, do 5 corkscrews down and up - give ball to next person in line		
		Around the world - see Day 3		
5 min.	3 on 2	11 - player		
remainder of class	5 on 5	Game play		

LESSON: Day (1) 2 3 4 5 6 7 8 9 10 FOCUS: Ball handling, Dribbling

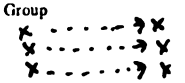
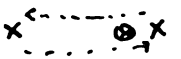
Date_____ Instructor_____

School MIDDLE SCHOOL Class: COED MALE FEMALE

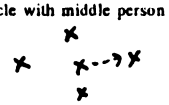
Place a checkmark by all activities that you covered. If you did something different, please note that on this sheet. It is very important that both coed and single-sex classes be taught the same material, even if for some reason you deviate from the scheduled lesson. However, please try to follow the lesson, even if something doesn't work in the first class.

Time	Activity	Drill or Game	Formation	Key Points
5 min.	Attendance, warm-ups	Choice		
5 min.	Ball-handling	Circles around neck, waist, ankles, both directions	Scatter (in partners or 3's if not enough balls)	Go slow, then increase speed
		Figure-8's around ankles both directions 5 times		
		Place ball between ankles; one hand behind one leg, other hand in front of other leg - switch hands, don't let ball touch floor		
2 min.	Dribbling	Explanation	Group	Use fingertips, not palm Keep ball below waist
2 min.		Dribble stop - dribble anywhere but stop moving when teacher blows whistle (keep dribbling during stop	Scatter	dribble in front of body toward side protect ball with other arm
3 min.		Dribble stop - stop moving when teacher raises hand	Scatter	Stress looking up for signal
5 min.		Dribble take-away - dribble in a confined area (1/2 of your half of gym). Students try to knock ball away without losing theirs.	Scatter	Protect ball with body & opposite arm
5 min.		Dribble relay with ball handling dribble to half court, do a specified ball-handling drill (ex. figure-8); then dribble with opposite hand to other end.	Shuttle formation Use as many teams as space allows	Stress control, not speed
3 min.		Reverse dribble - dribble to midcourt, pivot or turn toward ball side; switch hands and dribble back	Line formation	Demonstrate - turn toward ball side (turn into ball)
5 min.		Cone dribbling - use students as cones that must be dribbled around. a) students simply stand, b) students can try to knock ball away, but with both feet planted, c) keep 1 foot planted and try to knock ball away	Line formation	Stress using opposite arm to dribble to protect ball
	Rules	Double dribble, traveling, palming		

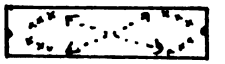
LESSON: Day 1 (2) 3 4 5 6 7 8 9 10 FOCUS: Passing MIDDLE SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
5 min.	Attendance, warm-ups	Choice		
5 min.	Review dribbling	Choose a drill NOT done the day before		Review key points of dribbling
2 min.	Passing and catching	Explanation: chest pass/bounce pass Pass to stationary player or to wall - specify either chest or bounce pass	Group 	Hands on side, slightly behind ball Thumbs behind ball, elbows close to body, step toward target, bounce 3/4 distance to target
3 min.		Pass to moving player - partner must ask for ball with hand out - passer throws a little ahead of hand	Scatter - partners can go anywhere to receive pass	Stress short passes - short leads Use both chest and bounce passes
5 min.		Monkey in the middle - middle person must play up ON person with ball. No lobs allowed. If middle person touches ball, a new person goes into middle. Switch after 5 passes if middle person is unsuccessful.	Coed groups of 3 	Stress bounce passes Look high, pass low & vice versa
remainder of class		*Keep away - no dribbling, no traveling. Team gets 1 point for 5-10 passes in a row. Must pass to different people (or must pass from boy to girl to boy) *Do this drill at end of class, even if you must skip another drill	Scatter - use pinnies	Stress quick passes, moving to get free
	Rules	Legal pivot		

LESSON: Day 1 2 (3) 4 5 6 7 8 9 10 FOCUS: Shooting MIDDLE SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
5 min.	Attendance, warm-ups	Choice		
5 min.	Review passing	5-star drill - 5 or more in group, middle person starts ball. Pass to any player, except persons to either side, and go to that player's spot. Player receiving ball does same.	Circle with middle person 	Use chest, then bounce passes, RUN to new spot Do not pass back to person who passed to you.
2 min.	Lay-ups	Explanation and demonstration	Group	For right -handed lay-ups: plant left foot, knee and arm of right leg go up; extend arm, flex wrist at end of shot
3 min.		Running lay-ups -one line runs toward basket with ball and shoots a lay-up, other line rebounds	2 lines	Place "X" on floor for foot plant
3 min.		Dribbling lay-ups - same drill as above but with dribble	2 lines	Stop dribble so that correct foot plant can be made
2 min.	Set shots	Explanation\of one- hand shot	Group	Hand behind ball, fingertips spread, elbows close to and in front of body Extend arm - wave goodbye to ball
5 min.		Shooting practice - take turns, rebound own ball - try to make 5 shots in a row from at least 6 feet away.	Partners or groups of 3	Stress rebounding own shot and making good pass to partner
5 min.		Around the world - place 5 X's at each basket; all persons in group must make a basket before group can go to next spot. Everyone shoots when it is their turn whether they made basket before or not	Groups of 4 or more 	Start groups using same basket at opposite spots; Rebound own shot

LESSON: Day 1 2 3 (4) 5 6 7 8 9 10 FOCUS: Individual defense MIDDLE SCHOOL

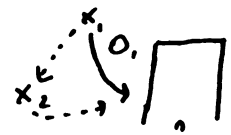
Time	Activity	Drill or Game	Formation	Key Points
5 min.	Attendance, warm-ups	Choice		
5 min.	Review shooting	Russian lay-ups - shoot at one end of the court and run to opposite line at the other end of court to rebound	2 lines at opposite baskets 	Stress running to the other end
2 minutes	Defensive stance	Explanation & demonstration	Group comfortable distance apart - either	Flex knees, palms up, feet parallel or one slightly back
5 min.		Slides - move down court using good form - use as many groups as there is room	Line	Zig-zag slides, pivot at each turn, stay low, do not cross feet
5 min.		Guarding dribbler - dribbler dribbles slowly in a zig-zag pattern; defensive player uses feet only (place hands behind back) to stay in front of dribbler; then do same drill but with correct arm positioning	Line	Stress sliding and staying low
remainder of class	Game play	3 on 3 or 4 on 4 - when 1 team loses ball or shoots and misses and does not get rebound, the other team comes on defense to replace them	3 teams to a basket	Stress player defense especially guarding player with ball
	Rules	Lane violations, charging, blocking		

LESSON: Day 1 2 3 4 (5) 6 7 8 9 10 FOCUS: Rebounding MIDDLE SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
5 min.	Attendance, warm-ups	Choice		
5 min.	Review shooting	Shuttle game - teams are lined up single file at spots on the court. 1st player shoots and retrieves ball, passes it to next player. Each time a shot is made, players yell out how many their team has made. When 5 baskets (or however many teacher designates) are made, team sits down in a single-file line.	Single-file lines	Shoot from 1 spot only 2 or 3 groups can be at same basket. Teacher designates spot. Players go to end of line after they shoot
2 min.	Rebounding	Explanation & demonstration	Group	Get into jumping position - crouch; Jump for ball, get ball at height of jump.
5 min.		Drill - at a wall, one student tosses ball underhand at wall. Rebounder remain stationary until ball leaves hand of tosser. They then try to get good position to get ball	3 to a group take turns being tosser or rebounder	
5 min.		Rebound, pass, lay-up drill - teacher tosses ball onto backboard. X_1 rebounds, throws to X_2. X_1 and X_2 pass back and forth down court and then shoots lay-ups. X_3 and X_4 go after X_1 and X_2 are at half court		Carry ball back to teacher Stress pivot after rebound Tell students to go to end of a different line
remainder of class	Game play	3 on 3	3 teams to a basket	Stress individual defense and rebounding
	Rules	Fouls		

LESSON: Day 1 2 3 4 5 (6) 7 8 9 10 FOCUS: Rebounding MIDDLE SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
5 min.	Attendance, warm-ups	Choice		
5 min.	Review	Choose drill that you have not had a chance to do or repeat one		Repeat only if all have been done
4 min.	Offensive moves	Explain: Head fake or shot fake - then drive Jab step and shot Have students stand and practice without ball	Group	Fakes must be believable Explain when to use each type
5 min.		Practice - allow students to practice these moves with a ball and a partner	with partner 3 or 4 partners at a basket	Discourage a lot of dribbling Make move and either drive or shoot; encourage students to begin by playing "dummy defense" at first
		Explain: Give and go; V-cut	Group	Explain use of each: V-cut is to change directions and fake out defender; Give & go - give up ball
		Practice - groups of 3; X_1 passes to X_2, cuts in front of O_1, and receives pass for a lay-up to get it back for a closer shot	1 or 2 groups to a basket	
Remainder of class	Game Play	4 on 4		Make sure that at least 5-8 minutes is spent on playing.



LESSON: Day 1 2 3 4 5 6 (7) 8 9 10 FOCUS: Player defense (team) MIDDLE SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
5 min.	Attendance, warm-ups	Choice		
10 min.	Review	Offensive moves not covered or review all by allowing players to play 1 on 1		
		2 on 2	4 to a basket; each 2 on 2 uses only one side of the court	Stress individual moves and give & go
5-7 min.	Player defense	Explain: sagging, helping out, blocking out		Avoid saying "man-to-man" Use "player-to-player"
remainder of class	Game play	5 on 5		Stress sagging into key (not playing a player without the ball too close

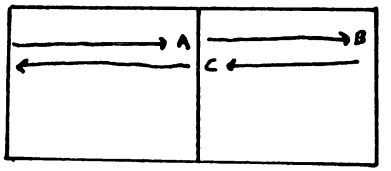
LESSON: Day 1 2 3 4 5 6 7 (8) 9 10 FOCUS: Game play (player defense) MIDDLE SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
5 min.	Attendance, warm-ups	Choice		
5 min.	Review dribbling	Choice of any dribbling drill		
2 min.	Offensive moves	Pick - Explanation & demonstration on-the-ball off-the-ball	Group	On ball - to free dribbler Off-ball - to free player to received ball
10 min.	Practice	3 on 3	Groups of 3	Allow students to devise ways to practice both on-ball and off-ball picks.
remainder of class	Game play	5 on 5		Stress use of picks and other offensive moves. Make sure defense is sagging and not playing a player without the ball too close

LESSON: Day 1 2 3 4 5 6 7 8 (9) 10 FOCUS: Zone defense MIDDLE SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
5 min.	Attendance, warm-ups	Choice		
5 min.	Review shooting	Shuttle game - see Day 5		
10 min.	Zone defense (2 - 1 - 2)	Explanation & demonstration: Positions Difference between zone and player defense	Group	Talk about usual requirements for each defensive position (example - height, quickness)
		Use students to demonstrate - pass ball around slowly while you move defense		
		Practice: place offense and defense at all baskets; have offense pass ball slowly while defense moves - then switch offense and defense		Make sure all students play each defensive position
remainder of class	Game play	5 on 5: zone defense. Have 1 team be offense for half the time and 1 be offense. Then switch; do NOT switch on every shot		Introduce a post player on offense - talk with each group individually. Remind about lane violations

LESSON: Day 1 2 3 4 5 6 7 8 9 (10) FOCUS: MIDDLE SCHOOL

Time	Activity	Drill or Game	Formation	Key Points
5 min.	Attendance, warm-ups	Choice		
5 min.	Review	Rebound, pass, lay-up drill	See Day 5	make equal and coed squads
5 min.		Ball handling - dribbling relay a) dribble to half-court, do 5 waist circles with ball b) dribble to end of court - do 5 circles around ankles c) dribble to center court, do 5 figure-8's right and left d) dribble to start line, do 5 corkscrews down and up - give ball to next person in line		
5 min.		Around the world	See Day 3	
remainder of class	Game play	5 on 5 (zone defense)		Allow teams to switch to player defense if they want

APPENDIX F

Background Questionnaire

Code Number: _____

Age: _____

Sex: (circle one) **female** **male**

School: _____

Grade: _____

Circle the sports in which you play on a team or have played on a team in the last 2 years:

Underline the sports that you participate in but have not been on a team:

Baseball	**Track**	**Tennis**	**Wrestling**
Softball	**Golf**	**Gymnastics**	**Volleyball**
Swimming	**Bowling**	**Skiing**	**Distance running**
Basketball	**Football**	**Soccer**	

How important is it for you to learn skills in basketball in physical education class?

1	2	3	4	5
extremely important	**fairly important**	**somewhat important**	**only a little important**	**not at all**

APPENDIX G

Post-questionnaire

MALE FEMALE (circle one)

If you had to pick between a physical education class for a year that was boys and girls mixed or that had only boys or only girls, which one would you pick? (circle one):
Mixed Boys/Girls

Should basketball be taught in a mixed class or separated for boys and girls?_____

What sports do you feel could be taught to both boys and girls together? Please list:

Are there any sports that you feel should definitely be separated by boys and girls? Please list:

What are some good things about having both boys and girls in the same gym class?

What are some bad things about having both boys and girls in the same gym class?

Compare your basketball ability to other girls in your class if you are a girl and to other boys in your class if you are a boy. Are you: (Circle one answer)

Better Worse About the same

APPENDIX H

Tables of Correlations

Self-perception Variables

	Confidence	Usefulness	Gender-appropriateness
Confidence			
Usefulness	.68**		
Gender-appropriateness	-.08	-.03	

Overall Environment Variables

	Behav	Comp	TSup	Affil	Inv
Behavior					
Competition	.12*				
Teacher Support	.36**	.10*			
Affiliation	.55**	-.03	.43**		
Involvement	.45**	.20**	.36**	.39**	

Gender-Specific Environmental Variables (Own Gender)

	Behav	Org	Comp	TSup	Affil	Inv
Behavior						
Organization	.47**					
Competition	-.33**	-.14**				
Teacher Support	.42**	.50**	-.17**			
Affiliation	.51**	.51**	-.27**	.45**		
Involvement	.54**	.53**	.03	.50**	.58**	

** $p < .01$ * $p, > 05$

Gender-Specific Environmental Variables (Opposite Gender)

	Behav	Comp	TSup	Affil	Inv
Behavior					
Competition	-.33**				
Teacher Support	.27**	-.16*			
Affiliation	.37**	-.14	.17*		
Involvement	.21**	.54**	.20**	.34**	

** $p < .01$ * p , >05

APPENDIX I

Multivariate and Univariate F's for Analyses of Pre-treatment Self-perception Variables by Assigned Class Type (Coeducational vs. Same-sex)

MIDDLE SCHOOL BOYS:

Wilk's Lambda F (3, 108) = .069, p = .977

Variable	df	Univariate F	Probability Level
Confidence	1, 110	.080	.778
Usefulness of Basketball	1, 110	.000	.994
Gender-appropriateness of Basketball	1, 110	.044	.833

MIDDLE SCHOOL GIRLS:

Wilk's Lambda F (3, 91) = .702, p = .554

Variable	df	Univariate F	Probability Level
Confidence	1, 93	.582	.447
Usefulness of Basketball	1, 93	1.37	.244
Gender-appropriateness of Basketball	1, 93	1.63	.205

HIGH SCHOOL BOYS:

Wilk's Lambda F (3, 93) = .820, p = .486

Variable	df	Univariate F	Probability Level
Confidence	1, 95	2.27	.135
Usefulness of Basketball	1, 95	.641	.425
Gender-appropriateness of Basketball	1, 95	.509	.477

HIGH SCHOOL GIRLS:

Wilk's Lambda F (3, 92) = .016, p = .997

Variable	df	Univariate F	Probability Level
Confidence	1, 94	.022	.883
Usefulness of Basketball	1, 94	.049	.824
Gender-appropriateness of Basketball	1, 94	.006	.938

APPENDIX J

Multivariate and Univariate F's for Analyses of Post-treatment Self-perception Variables for Students in Coeducational Classes by Teacher Gender

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MIDDLE SCHOOL BOYS:

Wilk's Lambda F (3, 50) = 1.33, p = .275

Variable	df	Univariate F	Probability Level
Confidence	1, 52	.029	.866
Usefulness of Basketball	1, 52	.120	.731
Gender-appropriateness of Basketball	1, 52	1.33	.275

MIDDLE SCHOOL GIRLS:

Wilk's Lambda F (3, 38) = 2.67, p = .061

Variable	df	Univariate F	Probability Level
Confidence	1, 40	.137	.714
Usefulness of Basketball	1, 40	2.98	.092
Gender-appropriateness of Basketball	1, 40	2.67	.061

HIGH SCHOOL BOYS:

Wilk's Lambda F (3, 40) = .610, p = .613

Variable	df	Univariate F	Probability Level
Confidence	1, 42	.737	.395
Usefulness of Basketball	1, 42	1.48	.231
Gender-appropriateness of Basketball	1, 42	.774	.384

HIGH SCHOOL GIRLS:

Wilk's Lambda F (3, 36) = .102, p = .959

Variable	df	Univariate F	Probability Level
Confidence	1, 38	.222	.641
Usefulness of Basketball	1, 38	.267	.608
Gender-appropriateness of Basketball	1, 38	.001	.975

APPENDIX K

Multivariate and Univariate F's for Analyses of Perceptions of the Overall Environmental Variables for Students in Coeducational Classes by Teacher Gender

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MIDDLE SCHOOL BOYS:

Wilk's Lambda F (5,47) = .847, p = .524

Variable	df	Univariate F	Probability Level
Student Behavior	1, 51	.005	.942
Class Competitiveness	1, 51	.029	.866
Teacher Support	1, 51	.009	.923
Affiliation	1, 51	1.79	.187
Student Involvement	1, 51	.003	.953

MIDDLE SCHOOL GIRLS:

Wilk's Lambda F (5,37) = 1.006, p = .428

Variable	df	Univariate F	Probability Level
Student Behavior	1, 41	.125	.725
Class Competitiveness	1, 41	.561	.458
Teacher Support	1, 41	.836	.366
Affiliation	1, 41	1.47	.232
Student Involvement	1, 41	.087	.769

HIGH SCHOOL BOYS:

Wilk's Lambda F (5, 38) = 2.128, p = .083

Variable	df	Univariate F	Probability Level
Student Behavior	1, 42	5.49	.024
Class Competitiveness	1, 42	.001	.980
Teacher Support	1, 42	1.66	.205
Affiliation	1, 42	1.15	.290
Student Involvement	1, 42	4.60	.038

HIGH SCHOOL GIRLS:

Wilk's Lambda F (5, 34) = 1.1391, p = .359

Variable	df	Univariate F	Probability Level
Student Behavior	1, 38	2.71	.108
Class Competitiveness	1, 38	.000	1.00
Teacher Support	1, 38	.105	.748
Affiliation	1, 383	.041	.841
Student Involvement	1, 38	.070	.793

APPENDIX L

Multivariate and Univariate F's for Analyses Gender-specific (Own Gender) Environmental Variables for Students in Coeducational Classes by Teacher Gender

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MIDDLE SCHOOL BOYS:

Wilk's Lambda F (6,47) = 2.248, p = .055

Variable	df	Univariate F	Probability Level
Student Behavior	1, 52	1.20	.279
Class Organization	1, 52	1.99	.165
Class Competitiveness	1, 52	.038	.846
Teacher Support	1, 52	.266	.608
Affiliation	1, 52	.743	.393
Student Involvement	1, 52	.228	.635

MIDDLE SCHOOL GIRLS:

Wilk's Lambda F (6,36) = 1.022, p = .427

Variable	df	Univariate F	Probability Level
Student Behavior	1, 41	1.67	.203
Class Organization	1, 41	.376	.543
Class Competitiveness	1, 41	1.20	.279
Teacher Support	1, 41	.379	.542
Affiliation	1, 41	.991	.325
Student Involvement	1, 41	.359	.552

HIGH SCHOOL BOYS:

Wilk's Lambda F (6, 37) = 1.70, p = .149

Variable	df	Univariate F	Probability Level
Student Behavior	1, 37	1.97	.168
Class Organization	1, 37	.096	.758
Class Competitiveness	1, 37	5.03	.030
Teacher Support	1, 37	.443	.510
Affiliation	1, 37	.226	.637
Student Involvement	1, 37	1.52	.225

HIGH SCHOOL GIRLS:

Wilk's Lambda F (6, 33) = 1.91, p = .109

Variable	df	Univariate F	Probability Level
Student Behavior	1, 33	2.84	.100
Class Organization	1, 33	.465	.500
Class Competitiveness	1, 33	2.45	.126
Teacher Support	1, 33	2.60	.115
Affiliation	1, 33	.688	.412
Student Involvement	1, 33	1.91	.176

APPENDIX M

Multivariate and Univariate F's for Analyses of Gender-Specific (Opposite Gender) Environmental Variables for Students in Coeducational Classes by Teacher Gender

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MIDDLE SCHOOL BOYS:

Wilk's Lambda F (5,48) = .865, p = ..511

Variable	df	Univariate F	Probability Level
Student Behavior	1, 52	1.64	.206
Class Competitiveness	1, 52	.754	.389
Teacher Support	1, 52	.784	.380
Affiliation	1, 52	.058	.810
Student Involvement	1, 52	1.27	.265

MIDDLE SCHOOL GIRLS:

Wilk's Lambda F (5,37) = 2.48, p = .049

Variable	df	Univariate F	Probability Level
Student Behavior	1, 41	6.83	.012
Class Competitiveness	1, 41	.949	.336
Teacher Support	1, 41	.081	.778
Affiliation	1, 41	.294	.591
Student Involvement	1, 41	3.02	.090

HIGH SCHOOL BOYS:

Wilk's Lambda F (5, 37) = 2.27, p = .067

Variable	df	Univariate F	Probability Level
Student Behavior	1, 41	4.23	.046
Class Competitiveness	1, 41	8.43	.006
Teacher Support	1, 41	.567	.456
Affiliation	1, 41	.649	.425
Student Involvement	1, 41	3.74	.060

HIGH SCHOOL GIRLS:

Wilk's Lambda F (5, 34) = .621, p = .684

Variable	df	Univariate F	Probability Level
Student Behavior	1, 38	.899	.349
Class Competitiveness	1, 38	1.11	.298
Teacher Support	1, 38	.028	.868
Affiliation	1, 38	.739	.395
Student Involvement	1, 38	.173	.680

APPENDIX N

Means and Standard Deviations (in parentheses) for Perceptions of the Overall Environment

	Coeducational Classes	Same-sex Classes
MALES		
Middle School (n = 107)		
Student Behavior	6.94 (1.77)	7.06 (2.06)
Class Competitiveness	5.76 (2.21)	7.07 (2.55)
Affiliation	6.43 (2.33)	6.13 (2.18)
Teacher Support	7.45 (2.17)	6.83 (2.29)
Student Involvement	6.94 (2.16)	7.44 (2.18)
High School (n = 100)		
Student Behavior	7.01 (1.65)	6.68 (2.11)
Class Competitiveness	6.09 (2.20)	6.81 (2.28)
Affiliation	6.77 (1.57)	6.04 (2.22)
Teacher Support	7.14 (1.96)	7.18 (2.02)
Student Involvement	6.30 (1.94)	7.11 (1.52)
FEMALES		
Middle School (n = 96)		
Student Behavior	6.61 (1.97)	7.45 (1.66)
Class Competitiveness	6.16 (2.60)	5.85 (2.19)
Affiliation	5.77 (2.81)	7.23 (2.02)
Teacher Support	7.93 (2.18)	7.43 (2.07)
Student Involvement	7.05 (2.07)	7.43 (1.86)

High School (n = 94)	Coeducational Classes	Same-sex Classes
Student Behavior	7.00 (1.96)	8.19 (1.51)
Class Competitiveness	5.80 (2.41)	5.94 (2.17)
Affiliation	6.73 (2.32)	7.67 (2.02)
Teacher Support	7.23 (2.41)	7.54 (2.38)
Student Involvement	7.13 (1.77)	7.80 (1.43)

APPENDIX O

Means and Standard Deviations (in parentheses) for Gender-specific Perceptions of the Environment - Own Gender

	Coeducational Classes	Same-sex Classes
MALES		
Middle School (n = 108)		
Student Behavior	3.22 (.75)	3.01 (.72)
Class Organization	3.71 (.58)	3.67 (.56)
Class Competitiveness	3.38 (.53)	3.43 (.45)
Affiliation	3.26 (.60)	3.11 (.48)
Teacher Support	3.14 (.47)	2.96 (.60)
Student Involvement	3.50 (.57)	3.38 (.52)
High School (n = 99)		
Student Behavior	3.30 (.63)	2.91 (.81)
Class Organization	3.76 (.51)	3.61 (.64)
Class Competitiveness	3.19 (.61)	3.49 (.45)
Affiliation	3.43 (.44)	3.02 (.58)
Teacher Support	3.20 (.41)	3.15 (.59)
Student Involvement	3.35 (.48)	3.10 (.66)
FEMALES		
Middle School (n = 96)		
Student Behavior	3.63 (.81)	3.21 (.72)
Class Organization	3.80 (.74)	3.87 (.56)
Class Competitiveness	2.83 (.44)	3.18 (.40)
Affiliation	3.41 (.61)	3.44 (.56)
Teacher Support	3.40 (.66)	3.54 (.62)
Student Involvement	3.27 (.73)	3.44 (.65)

High School (n = 94)	Coeducational Classes	Same-sex Classes
Student Behavior	3.81 (.54)	3.61 (.69)
Class Organization	3.71 (.55)	3.84 (.60)
Class Competitiveness	2.86 (.43)	3.02 (.50)
Affiliation	3.59 (.51)	3.46 (.56)
Teacher Support	3.33 (.54)	3.60 (.63)
Student Involvement	3.42 (.66)	3.42 (.66)

APPENDIX P

Means and Standard Deviations (in parentheses) for Class Competitiveness, Affiliation, Teacher Support, and Student Involvement Comparing Own and Opposite Gender Perceptions

	Own Gender	Opposite Gender
MALES		
Middle School (n =54)		
Class Competitiveness	3.38 (.53)	2.70 (.50)
Affiliation	3.26 (.60)	3.09 (.40)
Teacher Support	3.14 (.47)	3.12 (.53)
Student Involvement	3.50 (.57)	2.87 (.63)
High School (n = 43)		
Class Competitiveness	3.19 (.61)	2.76 (.36)
Affiliation	3.43 (.44)	3.40 (.42)
Teacher Support	3.20 (.41)	3.42 (.31)
Student Involvement	3.35 (.48)	3.10 (.66)
FEMALES		
Middle School (n = 43)		
Class Competitiveness	2.83 (.44)	3.91 (.52)
Affiliation	3.41 (.61)	2.94 (.71)
Teacher Support	3.40 (.66)	3.17 (.31)
Student Involvement	3.27 (.73)	3.80 (.59)
High School (n = 40)		
Class Competitiveness	2.86 (.43)	3.65 (.45)
Affiliation	3.59 (.51)	3.28 (.50)
Teacher Support	3.33 (.54)	3.14 (.47)
Student Involvement	3.42 (.66)	3.47 (.53)

APPENDIX Q

CODING SHEET

VARIABLE	CARD	COLUMN	VALUES
Subject number	1	1-3	
I. D. number	1	4-11	
Gender	1	12	1 = male, 2 = female
Grade	1	13	1 = MS, 2 = HS
Class type	1	14	1 = coed, 2 = ss
School	1	15	1 = B, 2 = G, 3 = M, 4 = H
Age	1	16-17	
Teacher gender	1	18	1 = male, 2 = female
Number of sport teams as a participant	1	19-20	
Number of sports involved in recreationally	1	21-22	
Basketball participation	1	23	1 = team, 2=recreation, 3 = none
Importance of doing well in basketball class	1	24	1 = extremely important 2 = fairly important, 3 = somewhat important, 4 = only a little important, 5 = not at all important
Pre self-efficacy	1	25-27	
usefulness, gender-appropriateness scales	1	30-59	
Overall environment scale	2	10-21	
Post self-efficacy	2	22-24	
Post confidence, usefulness, gender-appropriateness scales	2	30-59	
Gender-specific environment scale - own gender	3	10-59	
Gender-specific environment scale - opposite gender	4	10-59	

APPENDIX R

DATA

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