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THE EFFECTS OF COEDUCATIONAL VERSUS SINGLE-SEX PHYSICAL
EDUCATION CLASSES ON STUDENT PERFORMANCE

A Project
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Education:
Kinesiology

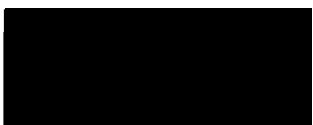
by
Jennifer Nicole Gormley
September 2008

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Approved by:



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8/21/08
Date



Shannon Siegel, Second Reader

ABSTRACT

A current concern of many physical educators today is whether or not the implementation of coeducational physical education classes is allowing students to reach their full potential. The purpose of this project was to review literature and research related to the topic of single-sex and coeducational physical education classes and how they affect students. Three main factors were examined; student physical activity levels, teacher interactions, and student perceptions of physical education classes. The majority of the instruction during the school year should be in a single-sex format with sufficient opportunities to participate and learn in a coed format as well. Results of the literature review varied.

ACKNOWLEDGMENTS

I would like to thank my professors at California State University, San Bernardino for all their help and support in the completion of this project. I would especially like to thank Dr. Chris Grenfell and Dr. Shannon Siegel for their support and guidance. I would also like to thank Dr. Linda Wilkin and Dr. Carolyn Martin for helping me understand what I am capable of.

Most of all I would like to thank my husband Kevin and my baby girl Kendall. Kevin for his love and support and Kendall for making this more of a challenge than I ever thought it would be and for always being able to make me smile at the end of a difficult day.

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CHAPTER ONE

INTRODUCTION

Problem Statement

Prior to the initiation of Title IX, formally called Title IX of the Educational Amendment Act of 1972, all physical education classes in public schools consisted of separate classes for males and females. Title IX was developed to create gender equity in sports and educational programs receiving federal funding. With the enactment of Title IX, school districts mandated that all physical education classes be conducted in coeducational settings. Little research was conducted prior to the initiation of Title IX to determine what format was better suited for students. Some educators, administrators, and scholars began to notice that the coeducational format may not be best for all students. Educators began to wonder if coed physical education was allowing all students to reach their full potential. A common argument against coed groupings is that, "elite female athletes practice on single-gender teams and compete in single-gender competitions, not in coed groupings. Yet, non-elite female physical education

students are required to compete in coed physical education classes where they may feel inferior" (Gabbei, p.34).

Some educators feel that "coeducational physical education classes will develop a more well-rounded individual" (McCarthy, Crawford, Docheff, Myrick, Hussey, McCrary, 1996, p.6). The environment is more comparable to society. "Coeducation is central to healthy living and may be the single most important psychosocial aspect of contemporary physical education" (McCarthy et al., 1996, p.6). Some educators believe that a single-sex format would promote additional learning and success in physical education classes. For example, Gabbei feels that Title IX:

Was based on a melting pot philosophy of integration, where all cultures blend into one overall culture. In practice, this philosophy meant that many different cultures would be dominated by the majority culture and that one culture is good for all. Consequently, in coed groupings, male students dominate physical and social interactions regardless of teacher sensitivity and instructional skill. Similar to the melting pot philosophy, coed physical education has not been found

to be good for all students. Recent changes in philosophy tend to support diversity and multiculturalism, with each group retaining the benefits of its own culture, while enjoying the benefits of other cultures (2004,p.34-35).

As long as activities and opportunities remain equal, programs will be in compliance with Title IX.

Purpose of the Project

The purpose of this project is to explore the effects of same-sex versus coeducational physical education on secondary students. Research in teacher interactions, student perceptions, and levels of participation will be examined. There are advantages and disadvantages for each format.

Scope

This project was designed to examine the research regarding single-sex and coeducational physical education environments in middle and high school levels. This project is intended to help secondary educators and administrators to reevaluate their physical education programs with regard to achieving the optimal environment for both genders. Educators and administrators will

achieve a better overall understanding of the topic. Information was gathered from a variety of academic and professional journals. The intent was to achieve an objective assessment of the best educational environment for physical education with regard to gender issues.

Limitations of the Project

This project intends only to use a review of the literature to provide a better understanding of coeducational and single gender physical education environments. The study is limited by design to focus on secondary level students. An examination of elementary level physical education students may be an appropriate focus for future study.

Definition of Terms

Coed or coeducational: Educating both sexes jointly in the same class.

MVPA: Moderate to vigorous physical activity.

PE: Secondary physical education classes.

Single-sex or single-gender: Educating each sex separately.

Title IX of the Educational Amendment Act of 1972: An Act of Congress focusing on equal opportunities in sports and education for male and female students. "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance (Title IX of the Educational Amendment Act, 34 C.F.R. § 106.31 [1972]).

CHAPTER TWO

REVIEW OF LITERATURE

Hannon and Ratliffe (2005) investigated the effects of single-gender and coed game-play situations on the physical activity levels of high school physical education students. Caucasian and African American students were examined for this study. The authors found no major differences in physical activity level for flag football, ultimate Frisbee and soccer, when controlling for teacher effects.

Examination of descriptive statistics further pointed out that, despite the type of game situation, female students were less active than males, and African Americans were less active than Caucasian students. The assessment of teaching behavior showed that teacher interactions with girls-only classes were higher than for boys-only classes. In coed games, girls received less interaction than boys when playing flag football and soccer.

In 2007, Hannon and Ratliffe published another article related to this topic. They examined how high school students interact with teachers and participate during various types of game play in single-gender and coeducational physical education settings. The main

question that was raised before the research was completed was, does a coed physical education setting result in a fewer number of participation opportunities and student teacher interactions for female students?

The results indicated that male students in a coed setting had considerably more opportunities to touch the ball per game in flag football and soccer when compared to males in a single-gender setting. Conversely, girls in a coed setting had considerably less opportunities to touch the football in flag football, the Frisbee in ultimate and the soccer ball in soccer when compared to females engaged in single-gender game play. The results also showed that, "when the total average interactions were considered, regardless of activity, there tended to be little difference in overall teacher interactions between students in coeducational and single-gender settings" (Hannon and Ratliffe, 2007). However, when examining both group and individual interaction statistics, girls received less teacher verbal interactions while participating in coeducational activities. Male students received more teacher verbal interactions during coeducational activities such as flag football than in single-gender activities. Overall, students received more verbal interaction from the

teacher in group single-gender activities (Hannon and Ratliffe, 2007).

A more detailed description of variables was examined by Derry and Phillips (2004). The purpose of their study was to examine certain teacher and student variables for female teachers and female students in single-sex and coeducational physical education classes. The student behavior variables measured were, "engaged skill learning time, physical activity enjoyment, global self worth, perceived athletic competence, and student initiated interaction" (Derry and Phillips (2004). The teacher behavior variables measured were, "teacher management time, teacher initiated interaction, and performance and motivation feedback" (Derry and Phillips, 2004).

The study showed that students in coeducational classes had considerably less engaged skill learning time and student initiated interactions. Major differences were found between the class' "level of enjoyment, global self worth, and perceived athletic competence" (Derry and Phillips, 2004). Teacher-initiated positive verbal interaction and total management time was considerably less for teachers of single-sex classes (Derry and Phillips, 2004).

In a case study conducted by Gabbei and Mitchell (2001), two seventh grade classes were examined. Both classes were organized into 10 to 15 day units conducted in both single-gender and coed formats. Students were interviewed and said they preferred single-gender groupings when improving skill was the objective. When social goals were the objective, students preferred coed groupings (Gabbei and Mitchell, 2001).

Results of a videotape examination of student practice illustrated that both male and female students received fewer practice trials and less effective practice trials in coed formats than in single-gender. Also, female students showed no improvement in skill level in coed formats, but did improve skill level in single-gender formats. Male students advanced the most in coed groupings. In addition, male and female students were distracted less often in single-gender formats (Gabbei and Mitchell, 2001).

McKenzie, Prochaska, Sallis, and LaMaster (2004) examined both coeducational and single-sex classes at nine different middle schools in Southern California. The researchers were looking at the impact single-sex and coed classes had on levels of physical activity. Researchers used heart rate monitors and observations to assess five

different, "levels of activity (lying down, sitting, standing, walking, and moderate to vigorous physical activity [MVPA])" (McKenzie et al, 2004, p.447). Lessons were also analyzed to determine how much time was spent on management, knowledge, physical fitness, skill drills, and game play (McKenzie et al, 2004).

Results showed that girls-only classes included less MVPA than boys-only and coed classes. Lesson contexts differed only in the area of skill drill minutes and game-play minutes. Girls-only classes included more skill development drills while coed and boys-only classes included more game play. The results showed that more time spent in skill drills reduced the amount of MVPA achieved. Researchers stated that, "While physical activity is an important goal for physical education, it is not the only desired outcome. Current results suggest that girls-only classes can provide more emphasis on building the motor and sport skills that many girls lack." (McKenzie et al., p.448)

Research by Cury and Biddle (1996) assessed personal and situational factors that influence intrinsic interest of adolescent girls in physical education classes. Girls were specifically assessed on perceptions of their physical

education class climate, dispositional achievement, goal orientations and perceived competence in physical education (Cury and Biddle, 1996).

The results indicated that adolescent girls' perceived ability was an important factor in determining intrinsic interest in physical education. Intrinsic interest appears to be influenced more by situational climate than by dispositional goals. Climate does play an important role in intrinsic interest. Two dispositional goals that do influence intrinsic interest are: mastery goal orientation that shows to enhance interest, whereas social comparison orientations were not related to interest. Mastery goal orientation refers to learning or achievement while social comparison orientation refers to performance goals. Overall, girls that perceived their class to be mastery oriented are more likely to feel competent, have a mastery goal orientation and feel intrinsically interested in physical education class. These findings give information that can possibly help provide teaching strategies for enhancing the intrinsic interest of adolescent girls in school physical education (Cury and Biddle, 1996).

Osbourne, Bauer, and Sutliff (2002) conducted a study "to better understand student perceptions of participating

in physical education within coed and non-coed classes" (Osbourne et al., 2002). A qualitative analysis was performed with the results from the interviews. Six categories were created from the information accumulated. They are, "varied interaction, interpersonal issues, effort/cooperation, same gender interaction, contact sports, and flexibility/low intensity sports" (Osbourne et al., 2002). For varied interaction, the girls often mention that it was nice being with the boys because they have a different perspective on the games and they had more fun. The boys stated that they enjoyed talking to the girls and getting to know them better. They felt the environment was enjoyable and fun (Osbourne et al., 2002).

For interpersonal issues the girls mentioned that a lot of the activities in physical education classes make them feel uncomfortable in front of the boys, especially warm-up activities. Some of the male responses included statements such as, "Uh, sometimes you know like your pants are kinda down and there's girls sitting across from you so you know it's kind of uncomfortable, that type of stuff. Like when you have to do stretches and just stuff that's uncomfortable" (Osbourne et al., 2002).

For effort/cooperation, the girls pointed out that sometimes the boys don't cooperate fully. They run around with their own agenda. The boys stated that when playing activities like football it is more enjoyable playing with just boys. The boys tend to try harder, whereas the girls just stand around and talk (Osbourne et al., 2002).

For same gender interaction some of the female responses included statements such as, "It's like nice to just be with girls and not have to worry about what the guys think or if there's a guy you like you don't have to try to impress him." The boys stated that it was nice being in the company of boys and doing things they would not normally do in front of girls (Osbourne et al., 2002).

Regarding contact sports, girls pointed out that they dislike participating in football because the boys tend to play rough, and the girls are usually less familiar with rules and strategy. One male individual stated that, "I'd say wrestling is better suited for boys than girls. Just 'cause it's more of a contact sport and I don't think girls are gonna do that cause their hair might get in the way or something like that" (Osbourne et al., 2002).

Female opinions regarding flexibility/low intensity sports included the idea that volleyball is a sport that is

better suited for girls only. The girls felt that the boys do not usually like volleyball because "all they have to do is hit the ball around with their arms." The boys also agreed that volleyball was a "girl's thing" (Osbourne et al., 2002).

The majority of students responded by saying that "single-sex classes have more advantages overall. The presence of the opposite gender tended to make the learning environment uncomfortable" and more focused on the environment than the learning (Osbourne et al., 2002).

The findings favored the teachers and students in the single-sex environment. Students were engaged in activity more and initiated more communication with their teachers. Teachers also used considerably less management time and initiated more positive verbal feedback with their students (Osbourne et al., 2002).

Multiple studies have examined student physical activity preferences in physical education classes. Regarding format, most middle school girls prefer same-sex based instruction over coed classes. They based their responses on lack of skill, fear of getting hurt, and fast paced play in coed classes versus more opportunities in single-sex classes. At the high school level they found

that girls preferred coed classes because they were more fun. However, they worked harder in the same-sex classes (Couturier, Chepko & Coughlin, 2007).

A study by Hill and Cleven (2005) examined 9th grade students' physical education activity preferences. When activity preferences were studied, "boys selected basketball, football, bowling, softball/baseball, and weight training as their top five activities, while girls selected basketball, volleyball, swimming, dance and softball/baseball" (Hill and Cleven, 2005). Most students preferred that each of the listed activities be conducted in a coeducational environment.

Lirgg examined the effects of attending either a coeducational or a single-sex physical education class on multiple self-perception variables. Both high school and middle school students were tested on multiple variables including self-efficacy (confidence in learning basketball), perceptions of the usefulness of basketball later in life, and perceptions of basketball as a gender-biased activity. Lirgg also studied how much perceived usefulness, gender-bias, and past experiences predicted confidence and student preferences for class type. Subjects consisted of 199 middle school students and 190

high school students from four Michigan schools. Students were randomly assigned to a single-sex class or a new coeducational class. Teachers were required to teach ten basketball lessons designed by the researcher and to complete an interview at the completion of the teaching unit. Each teacher was required to instruct one coed class and one single-sex class (Lirgg, 1993).

Results showed that after the unit, boys in coed classes "were more confident than boys in same-sex classes. However, boys' perceptions of the gender-appropriateness of basketball were not influenced by whether they participated in a same-sex or coeducational basketball class" (Lirgg, p.331). Girls in coeducational classes were not more confident than girls in single-sex classes. Also girls' perceptions of basketball were not affected by whether they were involved in a coed or single-sex class. For the girls, perceived usefulness, perceived gender-appropriateness, and past sport experiences were important factors in their self-confidence. For boys, perceived gender-appropriateness was not an important factor in their self-confidence. Lirgg commented that, "For boys, the social comparison process becomes much more difficult with the transition to an all-boy class because overall skill

level in an all-boy class in an activity such as basketball is probably higher than in a coeducational class" (Lirgg, p.332). Perceived usefulness was a strong indicator of self-confidence for males and females. Perceived gender-appropriateness was an important indicator of self-confidence for females. Regarding class preference type high school students favored coed classes, while middle school students favored single-sex classes. The students who had a chance to experience single-sex classes preferred a single-sex environment (Lirgg, 1993).

A study by Humbert (1995) examined how girls perceive coeducational physical education classes. The subjects were 50 high school girls that had been assigned to both single-sex and coed classes. Grades nine and ten consisted of single-gender classes, while grades eleven and twelve were coed format classes. Data were collected using journals, interviews, observations, and photographs taken by the students reflecting their experiences in physical education class (Humbert, 1995).

After analyzing the data, Humbert found that the girls felt they could relax and be themselves in the single-sex classes. The girls in coeducational classes had a negative perception of the physical education environment. There

were reports of male harassment, domination, and intimidation leading to a lack of female participation. Common complaints included remarks the boys made about their skill level or appearance that ridiculed and upset them. The girls also complained that the boys would dominate games causing the girls to shy away from activities. The girls often allowed the boys to control the physical environment. Humbert concluded that teachers of physical education classes must create an environment that is, "safe, supportive, and free from ridicule and harassment" (Humbert, 1995).

CHAPTER THREE

METHODS

The project began by accessing the EBSCO Host (Academic Search Premier) search engine via the John M. Pfau Library website. Keywords were typed in such as gender, coed, coeducational, and physical education. Next, scholarly journals were searched and reviewed. After reviewing journals related to the topic, select journals were obtained to photocopy and examine. The references used for this study were acquired from the following journals; The Physical Educator, The Journal of Physical Education, Recreation and Dance, The Journal of Teaching in Physical Education, The Journal of Educational Psychology, and Research Quarterly for Exercise and Sport. The main focus of the project was to present a better overall understanding of the topic to educators.

CHAPTER FOUR

SUMMARY

The review of literature for this project focused on three main factors: student physical activity levels, teacher interactions, and student perceptions of physical education classes.

In general the literature review showed that, regardless of the type of activity, males were more active than females, and girls in coed classes received less teacher interactions than boys (Hannon and Ratliffe, 2005). In a later study by the same authors (2007), they found that in a coed setting, male students had considerably more opportunities to touch required sports equipment. Girls in a coed setting had considerably fewer opportunities to touch the football in flag football, the Frisbee in ultimate Frisbee and the soccer ball in soccer when compared to females engaged in single-sex game play. The results also showed that, "when the total average interactions were considered, regardless of activity, there tended to be little difference in overall teacher interactions between students in coeducational and single-gender settings" (Hannon and Ratliffe, 2007). However, when

examining both group and individual interaction statistics, girls received less teacher verbal interactions while participating in coeducational activities. Male students received more teacher verbal interactions during coeducational activities such as flag football than in single-sex activities. Overall, students received more verbal interaction from the teacher in group single-gender activities (Hannon and Ratliffe, 2007).

Derry and Phillips (2004) found that students in coeducational classes had considerably fewer engaged skill learning time and student initiated interactions. Major differences were found between the class' "level of enjoyment, global self worth, and perceived athletic competence" (Derry and Phillips, 2004). Teacher-initiated positive verbal interaction and total management time was considerably less for teachers of single-sex classes (Derry and Phillips, 2004).

According to Gabbei and Mitchell (2001), male and female students received fewer practice trials and less effective practice trials in coed formats than in single-gender. Also, female students showed no improvement in skill level in coed formats, but did improve skill level in single-gender formats. Male students advanced the most in

coed groupings. In addition, male and female students were distracted less often in single-gender formats (Gabbei and Mitchell, 2001).

McKenzie, Prochaska, Sallis, and LaMaster (2004) found that girls-only classes included less moderate to vigorous physical activity (MVPA) than boys-only and coed classes. Girls-only classes included more skill development drills while coed and boys-only classes included more game play. The results showed that more time spent in skill drills reduced the amount of moderate to vigorous physical activity (MVPA) achieved. Researchers stated that, "While physical activity is an important goal for physical education, it is not the only desired outcome. Current results suggest that girls-only classes can provide more emphasis on building the motor and sport skills that many girls lack." (McKenzie et al., p.448)

According to Cury and Biddle (1996), adolescent girls that perceived their class to be mastery oriented are more likely to feel competent, have a mastery goal orientation and feel intrinsically interested in physical education class (Cury and Biddle, 1996).

Osbourne, Bauer, and Sutliff (2002) found that students felt that single-sex classes had more advantages

overall. The findings favored the teachers and students in the single-sex environment. Students were engaged in activity more and initiated more communication with their teachers. Teachers also used considerably less management time and initiated more positive verbal feedback with their students (Osbourne et al., 2002).

According to Couturier, Chepko, and Coughlin (2007), middle school girls prefer same-sex based instruction over coed classes. They based their responses on lack of skill, fear of getting hurt, fast paced play, and receiving more opportunities. At the high school level they found that girls preferred coed classes because they were more fun, however they worked harder in the same-sex classes (Couturier et al. 2007).

Lirgg (1993) found that after a basketball unit, boys in coed classes "were more confident than boys in same-sex classes. However, boys' perceptions of the gender-appropriateness of basketball were not influenced whether they participated in a same-sex or coeducational basketball class" (Lirgg, p.331). Girls in coeducational classes were not more confident than girls in single-sex classes. Also girls' perceptions of basketball were not affected by if they were involved in a coed or single-sex class. For the

girls, perceived usefulness, perceived gender-appropriateness, and past sport experiences were important factors in their self-confidence. For boys, perceived gender-appropriateness was not an important factor in their self-confidence. Lirgg commented that, "For boys, the social comparison process becomes much more difficult with the transition to an all-boy class because overall skill level in an all-boy class in an activity such as basketball is probably higher than in a coeducational class" (Lirgg, p.332). Perceived usefulness was a strong indicator of self-confidence for males and females. Perceived gender-appropriateness was an important indicator of self-confidence for females. Regarding class preference type high school students favored coed classes, while middle school students favored single-sex classes. The students who had a chance to experience single-sex classes preferred a single-sex environment (Lirgg, 1993).

Humbert (1995) found that girls felt they could relax and be themselves in the single-sex classes. The girls in coed environments had a negative perception of the physical education environment. There were reports of male harassment, domination, intimidation leading to a lack of female participation. Common complaints included remarks

the boys made about their skill level or appearance that ridiculed and upset them. The girls also complained that the boys would dominate games causing the girls to shy away from activities. The girls often allowed the boys to control the physical environment (Humbert, 1995).

CHAPTER FIVE

CONCLUSIONS

Both single-sex and coeducational physical education classes have their own advantages and disadvantages. Coed classes provide an opportunity for social development more comparable to a "real world" environment. Coed classes also seem to better increase the skill development and level of activity of male physical education students. Unfortunately, coed classes also seem to hinder the skill development of female students and can provide somewhat of a hostile environment for participation.

Single-sex environments seem to promote skill development in both genders, but do not compare to the development boys receive in coed classes. Single-sex environments seem to promote a more relaxing environment where students get the personalized curriculum they need, yet some social skills may not be obtained. If a single-sex format is used, there should still be a focus on equity within programs

There are many differing opinions regarding which format is best for students. Little research was conducted

prior to the initiation of Title IX, and little has been done since. In addition, Gabbei feels that:

The answer is to provide a balance of coed and single-gender classes, in a balanced curriculum based on student needs and legitimate learning goals, and to deliver instruction using recognized effective methods so that all students can achieve positive results in secondary physical education (Gabbei, 2004, p.39).

This study will hopefully clarify the effects of single-sex and coeducational physical education environments.

Currently there is no definitive answer to what is best for students, but students deserve for both options to be further explored.

REFERENCES

- Couturier, L., Chepko, S., & Coughlin, M. (2007). Whose gym is it? Gendered perspectives on middle and secondary school physical education. *Physical Educator*, 64(3), 152-158.
- Cury, F., & Biddle, S. (1996). Personal and situational factors influencing intrinsic interest of adolescent girls in school physical education: A structural equation modeling analysis. *Journal of Educational Psychology*, 16, 305-316.
- Derry, J.A., & Phillips, D.A., (2004). Comparisons of selected student and teacher variables in all girls and coeducation physical education environments. *Physical Educator*, 61, 23-24.
- Gabbei, R. (2004). Achieving balance: Secondary physical education gender grouping options. *JOPERD: The Journal of Physical Education, Recreation & Dance*, 75, 3, 33-39.
- Gabbei, R. & Mitchell, M. (2001). Middle school physical education and gender issues: Student behaviors and perceptions. Presented at the meeting of the American Alliance for Health, Physical Education, Recreation and Dance. Cincinnati, OH.
- Hannon, J.C. & Ratliffe, T. (2005). Physical activity levels in coeducation and single gender high school physical education settings. *Journal of Teaching in Physical Education*, 24, 140-164.
- Hannon, J.C. & Ratliffe, T. (2007). Opportunities to participate and teacher interaction in coed versus single-gender physical education settings. *Physical Educator*, 64, 11-20.
- Hill, G & Cleven, B. (2005). A comparison of 9th grade male and female physical education activities preferences and support for coeducation groupings. *Physical Educator*, 62, 187-197.

- Humbert, M.L. (1995). On the sidelines: The experiences of young women in physical education classes. *Avante*, 1(2), 58-77.
- Lirgg, C.D. (1993). Effects of same-sex versus coeducational physical education on the self-perceptions of middle and high school students. *Research Quarterly for Exercise and Sport*, 64(3), 324-334.
- McCarthy, S., Crawford, S., Docheff, D., Myrick, L., Hussey, K., & McCrary, A. (1996) Does coeducational physical education help high school students reach their full potential? *JOPERD: The Journal of Physical Education, Recreation & Dance*, 67, 8, 6-7.
- McKenzie, T.L., Prochaska, J.J., Sallis, J.F., & LaMaster, K.J. (2004). Coeducational and single-sex physical education in middle schools: Impact on physical activity. *Research Quarterly for Exercise and Sport*, 75(4), 446-449.
- Osborne, K., Bauer, A., & Sutliff, M. (2002). Middle school students' perceptions of coed versus non-coed physical education. *Physical Educator*, 59, 83-90.
- Title IX of the Educational Amendment Act, 34 C.F.R. § 106.31 (1972).