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ABSTRACT

This paper describes the implementation and development of a program promoting gender equity in the classroom and the lessening of stereotypical attitudes toward gender. Gender equity issues affected most of the students in the targeted intermediate and secondary special needs and general population. Male and female students exhibited stereotypical attitudes, which influenced the learning process. Teacher observations, disciplinary actions, student attitude surveys, and educational research provided evidence of the problem. Probable causes included a difference in learning styles between males and females and teachers exhibiting gender bias in lessons and attitudes. One significant cause mentioned was that the U.S. culture promotes gender stereotypes. A review of solution strategies and analysis of the problem setting resulted in the development of a three-part action plan: (1) a redesign of cooperative learning groups with attention to gender equity; (2) an assessment and adaptation of materials to eliminate or lessen gender bias; and (3) an assessment and adaptation of the classroom environment to eliminate or lessen gender bias. Tools used to measure the interventions' effects included a student attitudes survey, a behavioral checklist for cooperative learning groups, a disciplinary action tally sheet, and an open-ended student survey. Post-intervention data indicated a slight decrease in stereotypical attitudes for both genders, a slight decrease in disruptive behavior by all students, an improvement in the selection of materials by teachers, and a positive change in the learning atmosphere to promote gender equity. (Contains 3 tables, 9 figures, and 20 references. Appended are sample surveys, a cooperative learning checklist, a disciplinary action tally sheet, and a stereotypical attitudes calendar.) (BT)

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STEREOTYPICAL ATTITUDES TOWARDS GENDER: AN ONGOING PROBLEM

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An Action Research Project Submitted to the Graduate Faculty of the

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ABSTRACT

This project describes a program promoting gender equity in the classroom and the lessening of stereotypical attitudes toward gender. Gender equity issues affected most of the students in the targeted intermediate and secondary special needs and general populations. Male and female students exhibited stereotypical attitudes, which influenced the learning process. Teacher observations, disciplinary actions, student attitude surveys, and educational research provided evidence of the problem.

According to literature, probable causes for the problem included a difference in learning styles between men and women, teachers exhibiting gender bias in lessons and attitudes. Perhaps the most significant cause mentioned was that the American culture promotes gender stereotypes.

A review of solution strategies presented in the literature, combined with the analysis of the problem setting, resulted in the development of a three-part action plan. The first intervention involved the redesigning of cooperative learning groups with the attention to gender equity. The second intervention was to assess and adapt materials to eliminate or lessen gender bias. The third was to assess and adapt the classroom environment to eliminate or lessen gender bias. The tools used to measure the effects of the interventions included a student attitudes survey, a behavioral checklist for cooperative learning groups, a disciplinary action tally sheet, and an open-ended student survey.

Post intervention data indicated a slight decrease in stereotypical attitudes within both genders, a slight decrease in disruptive behavior by all students, an improvement in the selection of materials by teachers, and a positive change in the learning atmosphere to promote gender equity.

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CHAPTER 1

PROBLEM STATEMENT AND CONTEXT

General Statement of the Problem

According to Fennema's definition (as cited in Sanders, 1997), gender equity issues include the recognition of biased educational materials, attitudes, and opportunities. In addition, gender equity encompasses the interventions educators take to ensure equal educational outcomes for both sexes. Gender equity issues affected most of the students in the targeted intermediate and secondary special needs and secondary general populations. Male and female students exhibited stereotypical attitudes, which influenced the learning process. Teacher observations, disciplinary actions, student attitude surveys, and educational research provided evidence of the problem.

Immediate Problem Context

Intermediate Site A and secondary Sites B and C were involved in the following research. All information was taken from the 1999 School Report Card.

Site A was part of a small district with one elementary school and one junior high school. The elementary school contained students in grades Pre K through five with a total enrollment of 484 students and an average class size of 21 students. Ethnic background of the student population was as follows: 78.3% White, 5.2% Black, and 16.5% Hispanic. Low-income students made up 34.7% of the population. The attendance

rate was 94.9% with a chronic truancy rate of 1.3%. All 49 teachers in the district were White including 89.9% female and 10.2% male. The average years of teaching experience were 14.2, with an average salary of $41,278 per year. Teachers with their Master's degree and above comprised 40.5% of the staff.

The school program included language arts, reading, mathematics, science, social studies, physical education, music, and art. Approximately six special education programs that served children with learning disabilities were provided with in-house instruction. Any children with behavioral or mental disabilities were provided service in another district. There were eight students in the targeted intermediate special needs class. There were six girls and two boys. The targeted class was a self-contained instructional classroom for children with special needs.

Site B was a language arts class composed of high school students, mainly juniors, of average to below-average abilities and performance levels. Students at Sites B and C belonged to a total student population of 2,397 with 86% White, 3% Black, 10% Hispanic, and 1% Asian/Pacific Islander and Native American. Almost 17% of families represented by the students were classified low income and received public aid for certain living expenses. Attendance rates at the school indicated 93% of the students were present each day, with a chronic truancy rate of 4%; in addition, the school reported a mobility rate of 11%. Like the student body, the staff was primarily White at 97% and was also primarily female at 73%. The staff was one of veteran teachers who had an average of 16 years teaching experience; those with Bachelor's degrees made up 48% of the staff while those with a Master's degree and above represented 52%.

Site C was a self-contained special needs program housed at a large comprehensive secondary school. The program offered instruction in language arts, mathematics, science, health, physical education, social skills, daily living skills and vocational training. The composition of Site C was 17 students, 54.92% girls and 47.08% boys. The ethnicity of Site C was 82.36% White and 17.64% Black. The socioeconomic background was diverse; students in the lower socioeconomic level who qualified for free lunch and tuition credit accounted for 25% of the population. Another 25% were single parent households in the lower middle socioeconomic level and did not qualify for any assistance. The remaining 50% were from families with two working parents of middle to above-middle socioeconomic levels. Attendance at Site C was 99% with no truancy or tardy problems.

The staff for Site C consisted of one teacher enrolled in graduate studies with 27 years teaching experience. A full time teacher aide with three years college credit in education and five years classroom experience assisted with the program.

Sites B and C were housed in a four year comprehensive secondary school with an enrollment of 2,397, which graduated its first class in 1876. The North Central Association of Colleges and Schools had recognized it since 1904. In 1999 an average of 78% seniors continued their education, 39% attended a college or university, 29% attended a junior college and 10% attended a vocational/technical school. The ethnicity was 86.1% White, 2.9% Black, 9.3% Hispanic, 1% Asian and .1% Native American. The facility for Sites B and C was a three storied H-shaped building constructed in the 1950's. The campus had an indoor pool, multiple tennis courts, a vocational wing, an auditorium, several gyms, and six multi-media labs with the latest in technology. Due to

enrollment, the facility did not have an on-campus area where the entire student body and staff could meet together.

The Surrounding Community

Site A was a Pre-K through 8 district. One large G-shaped building that served all grades and programs with a school population of 484 students. It was a multi-winged, single story building that was located in a residential neighborhood. The administration of the school district consisted of one superintendent, one elementary principal, one junior high principal, and one director of special services with an elected school board.

The socioeconomic status of the community was low to lower middle class with a median income of $22,354. Site A was located in a manufacturing and small industry community in the northwestern Midwest. The ethnicity of the community was 89.6% White, 2.9% Black, 1.0% American Indian, 3.2% Hispanic, .06 % Asian/Pacific Islander, and 2.7% other.

The community was very supportive of the Site A facility. Parent and community involvement were high in the parent teacher organization. The community supported the special needs programs in the district by providing volunteers to assist in the education of each student with special needs.

Sites B and C were part of a K-12 district, including 14 elementary buildings, two middle schools, one K-12 special needs facility and two high schools, one comprehensive and one alternative. The school population totaled 6,215. The administration of the district included one superintendent, two assistant superintendents, one director of special needs, one director of curriculum, and one director of technology with an elected school board.

The socioeconomic status of the community was low to lower middle class with a median income of $27,512. The Sites B and C were located in a manufacturing and small industry community in the northwestern Midwest. The ethnicity of the community was 96.6% White, 1.1% Black, 2.1% Hispanic, and .2% Asian.

The community was very supportive of the Sites B and C. Parent and community involvement has evolved from the PTSA and booster organizations to foundations that recognized achievement and provided funds for programs. A leading equipment manufacturer had formed a partnership with the district, which recognized accomplishments of staff and students. A leading health care provider had formed a similar partnership with the special needs facility, which recognized accomplishments of students.

National Context of the Problem

Gender equity in the nation's schools has been a major issue of concern for almost a quarter of a century. From sports fields to Supreme Court decisions, the debate continues as to what "gender-equity" really means (Bailey, 1996), whether or not the issue is valid, and what implications it has in school, community, and work environments.

The issue of gender equity has not only generated debate and concern locally, but continues to be a global issue as well. Susan Bailey (1996), the principal author of the seminar AAUW report, defines gender equity as a "balanced experience" rather than "exclusive, one-sided, single-sex, all-female or all-male one" (para. 4). According to the World Conference on Education For All, "... equity must be made a priority beginning in early childhood" (as cited in D'Ambosio, 1997, para. 10). Although studies by the

American Association of University Women and Wesley College indicated that American education is still "shortchanging" girls (Bailey, 1996), attention is shifting to the documented "underachievement of boys and young men" (Whitelaw, Milosevic, & Daniels, 2000, para. 2). In fact, Barlow reported that Dwyer and Johnson indicated "females in all ethnic groups tend to earn higher grades in school than do males across different ages and eras and across different subject matter disciplines. This female advantage in grades is small, Kleinfeld says, but it is consistent, and it continues through college" (as cited in Barlow, 1999, para. 6). Kleinfeld further stated the gender gap has virtually closed in terms of their numbers who take math and science classes in school (Barlow, 1999). "In the latest rounds of international tests in math and science, the achievement gap between girls and boys in the United States was among the smallest in the world" (Viadero, 1998, para. 5). Technology has replaced math and science for gender equity. "In 1996, girls made up only 17% of students taking College Board's Advanced Placement test in computer science" (para.7). National Center for Education statistics supported the research that young women continue to lag behind males in mathematics and science achievement in high school and are less likely to major in those fields in college (Bowman, 2000).

Due to ongoing gender issues, cross-curricular activities and interventions have been proposed. Title IX led the way in gender equity in all aspects of public education. "Title IX…mandates that schools not deny any student participation in any educational program or activity on the basis of sex" (The Mid-Atlantic Equity Center, 1993, para. 5). According to Whitelaw, Milosovic, and Daniels (2000), Arnot proposed a national curriculum so that American students might pursue subject areas that were once

considered gender exclusive. Teachers of traditional male subjects such as math and science have provided leadership in making curricular changes to accommodate gender equity in the classroom. For instance, the Enrichment Readiness for Girls (ERG) intervention program has positively influenced girls' attitudes by using "hands-on experiences, role-model contacts, and encouragement" (Koontz, 1997, para. 22). Teaching strategies such as story problems, journals, cooperative learning, visual aides and an environment of community learners have helped shorten the gap.

The gender equity issue not only raises concern in the educational community, but also has broad implications throughout society. Industry leaders such as Hewlett Packard and AT&T have provided funding for mini-grant projects in 28 states for teacher education concerning gender equity (Sanders, 1997). In addition, the business world has grown more sensitive to the exclusion of women in upper management roles, commonly referred to as "the glass ceiling." Businesses have created on-site day care in order to facilitate gender equity in the work force. Teachers and parents are more sensitive to the stories they are reading to their children; selection criteria now includes gender role models which are presented from both male and female perspective. Perhaps the most significant gains have occurred within family units as stay-at home dads and working moms provided alternate role models for today's children.

CHAPTER 2

PROBLEM DOCUMENTATION

Problem Evidence

In order to document the problem of stereotypical attitudes toward gender at Sites A, B, and C, teachers at the three sites developed and administered several assessment tools. A student survey, which was adapted to all ability levels and focused on gender-biased attitudes, was administered before interventions. At Sites A, B, and C, the survey attitude statements were read aloud to the students participating in the research. The teacher recorded student responses on the Human Bar Graph Survey form. The results of the student attitudes are reported in the following graphs for each site (Table 1).

Table 1

Student Survey Human Bar Graph, Site A

Question	Agree	Neutral	Disagree
It is okay for boys to cry.	2	1	4
Girls shouldn't be allowed to play on boys' teams.	2	2	3
It is not okay for boys to play with dolls if they want to.	4	2	1
It is not okay for girls to play with trucks if they want to.	3	2	2
Boys get into trouble more often than girls do.	3	2	2
Girls are better readers than boys are.	1	3	3
Boys are better at math than girls are.	4	2	1
Teachers punish boys more often than they punish girls.	4	2	1
A girl could never grow up to be president of the United States.	4	2	1
Boys are troublemakers; girls well behaved.	3	2	2
Girls do neat work; boys do sloppy work.	3	2	2
Boys are good at math and science.	2	3	2
Girls are good at spelling and reading.	3	3	1
Boys are better at science than girls are.	4	2	1
Boys are better at physical education than girls are.	3	2	2
Girls get better grades than boys do.	3	2	1
Boys don't like school; girls like school.	4	2	1
Boys are better at using computers than girls are.	2	2	3

Table 2

Student Survey Human Bar Graph, Site B

Question	Agree	Neutral	Disagree
It is okay for boys to cry.	7	10	8
Girls shouldn't be allowed to play on boys' teams.	6	1	19
It is not okay for boys to play with dolls if they want to.	11	3	20
It is not okay for girls to play with trucks if they want to.	10	2	14
Boys get into trouble more often than girls do.	19	0	7
Girls are better readers than boys are.	10	13	3
Boys are better at math than girls are.	6	14	6
Teachers punish boys more often than they punish girls.	18	4	4
A girl could never grow up to be president of the United States.	1	5	20
Boys are troublemakers; girls well behaved.	0	0	26
Girls do neat work; boys do sloppy work.	2	7	19
Boys are good at math and science.	7	16	3
Girls are good at spelling and reading.	3	17	6
Boys are better at science than girls are.	4	14	8
Boys are better at physical education than girls are.	0	9	7
Girls get better grades than boys do.	16	3	7
Boys don't like school; girls like school.	9	3	14
Boys are better at using computers than girls are.	7	4	15

Table 3

Student Survey Human Bar Graph, Site C

Question	Agree	Neutral	Disagree
It is okay for boys to cry.	5	5	7
Girls shouldn't be allowed to play on boys' teams.	10	2	5
It is not okay for boys to play with dolls if they want to.	10	3	4
It is not okay for girls to play with trucks if they want to.	9	2	6
Boys get into trouble more often than girls do.	11	1	5
Girls are better readers than boys are.	9	3	5
Boys are better at math than girls are.	8	2	7
Teachers punish boys more often than they punish girls.	8	4	5
A girl could never grow up to be president of the United States.	13	1	3
Boys are troublemakers; girls well behaved.	11	1	5
Girls do neat work; boys do sloppy work.	11	2	4
Boys are good at math and science.	9	2	6
Girls are good at spelling and reading.	10	1	6
Boys are better at science than girls are.	11	2	4
Boys are better at physical education than girls are.	10	1	6
Girls get better grades than boys do.	11	1	5
Boys don't like school; girls like school.	11	2	4
Boys are better at using computers than girls are.	8	1	8

Results from an anecdotal checklist were compiled during a four-week period. The data verified gender stereotypes within cooperative learning dynamics at all three sites (Table 2)

In addition, teachers at the three sites kept disciplinary tally sheets, which offered insight into how gender attitudes affected classroom atmosphere and student participation (Table 3).

Probable Causes

Educational research and literature reveal a great deal about causes for stereotypical attitudes among American students. Probably the most significant cause is that American culture promotes gender stereotypes. Campbell and Storo (1994) stated that many myths in the American culture lead to stereotypical views and beliefs by most American students. Some myths are that "real" women do not do math and "women are qualitative; men are quantitative" (para. 12). As a result of this cultural belief, Campbell and Storo concluded that "girls who think of math as a 'male thing' are less likely to go on in math and less likely to do well in math" (para. 13). The researchers went on to report that many believe there is a math gene linked to sex and that hormones affect every aspect of physical and intellectual development. This obviously results in parents' lowering their expectations for girls in science and math. Some educators add to the problem by using the excuse of a "math gene" to mask their own stereotypes and prejudices. Campbell and Storo (1994) also found that many educators believe female students learn better from female teachers. As a result, some girls avoid classes taught by

males. Male teachers may also avoid female students because they feel they cannot reach or understand them.

All of these views are present in the American culture and stem from the very early history of society. The belief that males are rightfully more important, valuable, and powerful as leaders of society probably has its roots in the ancient past when they were hunters, gatherers, and protectors, the principal producers in society. Despite the changing statistics and research, the belief that men are superior in our society is the American view, the American way. American students easily accept such stereotypes, especially when they are reinforced by literature, television, film, music, and advertising. If our society conveys the males as smarter and superior, then the American society and American education will continue to view men as dominant and women as inferior.

Another significant cause for stereotypical attitudes in American students is the difference in learning styles between women and men. According to Philbin et al. (1995) several studies support the work on learning styles by Belenky, Clinchy, Goldberger, and Tarule. Since girls learn differently from boys, and men occupy the most powerful, decision-making positions in education, it follows that traditional instruction supports and rewards male learning styles while it ignores or devalues female learning styles. Kolb developed a Learning Style Inventory (LSI) to "describe how people learn and how they deal with ideas and situations" (as cited in Philbin et al., 1995, p. 486). His system of four learning styles: Accommodators (doing and feeling) learn best using "hands-on" experience; divergers (feeling and watching) are most comfortable using imagination combined with experience and observation; convergers (doing and thinking) work best when finding "practical uses for ideas and theories," while assimilators enjoy organizing

and analyzing information, designing experiments, and testing theories (p. 486). Of the four learning styles, assimilators are best suited for academic careers, and as a result, the traditional educational system favors rationalism and objectivity. Since women tend to score higher in concrete experience, feeling, and intuition while men excel in abstract conceptualization, analysis, and logic (p. 486), historical educational approaches and theories have tended to depreciate women's contributions as being unfounded and "hormonal". Young women raised in culture with a male-dominated power system quickly respond to this obvious if unspoken message by labeling themselves as less intelligent and ultimately of less value than their male classmates.

Teachers' exhibiting gender bias in lessons and attitudes is another significant cause for stereotypical attitudes in American students. Gender bias exists across the curriculum from elementary, middle school, and high school classrooms. "Teachers differ in their perceptions of the foundations of human gender differences... Opinions held on this pivotal issue usually determine the extent to which teachers believe they can and should impact gender roles in their classrooms" (Singh, 1998, para. 2). Stereotypical attitudes towards gender exist in the content, language, and illustrations of a large number of children's books. Many of the classics and popular stories reflect masculine and feminine roles with the main characters dominated by male figures. Such gender stereotypes are prevalent not only in mainstream children's books, but also in Newberry and Caldecott medal winners. The ability to find books that do not portray either gender in a stereotypical manner is another reason for concern (Singh, 1998).

According to Malloy (2000), math and science educators must understand that stereotypes exist and teachers contribute to them both voluntarily and involuntarily.

Malloy (2000) further stated that because many educators misidentify with an appropriate educational process, learning does not take place, as it should. Math and science curricula should provide equity in what is learned by males and females. Equity will give students the choice of careers, not force them to choose a career based upon their perceived inability to achieve in mathematics.

Sanders (1997) concluded that the third cause for educational gender bias is that many adults may not realize they hold beliefs that boys excel in mathematics, science, and technology while girls excel in the arts. Subtle and unintended messages can create the idea among girls and boys that there are fields in which they cannot succeed because of their gender.

Several other causes exhibit minor influences on the stereotypical attitudes of American students. Some include the lack of interest shown by educational decision makers, the hostile environment towards women present in some schools, and the intervention programs that focus mainly on women's issues rather than those of both genders. Salomone (2000) reports that Grogan expressed doubt that the educational reforms of the 1980's, including gender equity issues, will have much of an impact on public schools. Even though many administrators are aware of the effects of gender, race, and class issues on student success, other concerns such as budgets, school safety, and standardized testing consume their attention and time. Students are not likely to change their attitudes toward gender roles if it is not a focus of the school leaders. Salomone (2000) reported that a "sexually hostile environment" affects self-esteem in girls moving from elementary to middle and high schools (para. 5). Studies by the AAUW confirmed that young women struggle both academically and emotionally when they are faced with

taunts and threats in the halls of American schools. Ironically, another cause of continuing stereotypical attitudes lies with some proposed solutions to the problem. Barlow (1999) questioned programs that focus primarily on girls' problems since, "It is girls who get higher grades in school, who do better than boys on standardized tests of reading and writing, and who get higher class ranks and more school honors" (para.4). As the literature suggests, the impact of stereotypical attitudes towards gender in American students is a complex issue related to numerous and diverse causes. Therefore the proposed solutions will need to utilize a variety of approaches and outcomes.

CHAPTER 3

THE SOLUTION STRATEGY

Literature Review

Addressing gender bias is an important issue in American education. The nation's schools have attempted to deal with the problem in the courtroom and athletic areas for over 25 years. The debate over various solutions continues both in theory and in practice. According to Bailey (1996) "Schools must help girls and boys acquire both the relational and competitive skills needed for full participation in the workforce, family, and community" (para.75).

In this chapter, gender bias in the classroom will be addressed. In addition, several unbiased teaching strategies will be discussed and an overview of the action research objectives and plan will be outlined.

Every child must recognize what gender stereotyping is, why it is so prevalent, and how it affects people's attitudes and actions. Educators focusing on student needs realize that perhaps one of the most important factors in personal success is developing a positive self-concept, regardless of gender or perceived ability. In order to achieve this self-concept, students must learn not to limit themselves according to academic, athletic, or career stereotypes. In the classroom, a positive self-concept is enhanced when students associate freely and exhibit positive attitudes about gender.

Teachers can guide the students in identifying and analyzing personal, family, and social attitudes about men and women.

Three disciplines associated with traditional gender stereotypes are math, science, and technology. Because teachers have tremendous power in influencing positive and negative attitudes within their classrooms, comments implying that women are not good at math and science should be replaced with encouragement for both genders. According to Campbell and Storo (1994), statements like, "Women aren't good in math" (para. 15) reflect attitudes common in American culture. However, teachers have the opportunity to counteract those attitudes by providing examples of female role models who are successful in math, science, technology, and related fields. Students should be reminded that success is determined by quality of the work, not the gender of the student. Checkley (1996) emphasizes the role of the teacher "... to provide a supportive environment in which young girls [can] explore science and to foster a positive attitude toward science, technology, and math" (para. 8). Keogh, Barnes, Joiner, and Littleton's (2000) research postulates that mixed-gender technological activities foster gender equality by challenging the students' perceptions (para. 22). In addition, research has verified that there is no evidence of a "math gene." Documented studies indicate that using practice and encouragement to improve math skills benefits both genders. Over time, teachers can lesson the effects of stereotypical attitudes on student success in math, science, and technology.

Educational materials also often reflect traditional gender biases that exist in American culture. Sanders (1997) found the curriculum materials, which are biased in language, content, and/or illustrations often reinforce the stereotypical idea that some

fields are gender specific. Singh (2000) cites studies of McAuliff (1994) and Kamler (1993) who "...found that the portrayal of children's writing often reflects gender stereotypes. In addition, individual beliefs about the dominance or subordination of particular genders frequently determine whose ideas are heard or ignored in student discussions" (para. 1). In addition to gender bias in materials, teachers unknowingly exhibit gender bias in their teaching styles.

Sanders (1997) found that teachers are almost unaware of the biased behaviors they exhibit through verbal interactions, eye contact, and body language. Grossman and Grossman (1990) outline several positions to help lessen gender bias in the classroom. The positions include preparing students for androgynous or "gender-neutral" roles, preparing students for different gender roles, and helping students decide for themselves whether they wish to conform to any particular gender roles (Singh, M. 1998). Shamai (1994) recommends that teachers develop "a learning environment that is free of sex-role stereotyping" (para. 7). Teachers can follow through encouraging active participation in sports, drama, and dancing classes equally among boys and girls.

Other strategies to lessen gender bias in schools are also suggested by research. Koontz (1997) suggested teachers change their belief systems and their classroom behaviors to incorporate gender-neutral techniques. Some of these strategies include providing spatial activities on a regular basis, ignoring girls' "small talk" during group work, encouraging girls to try non-traditional, male-dominated activities, and providing sufficient wait time for response. As documented in the WEEA Equity Resource Center (2000) report, research reveals that most teachers believe they treat

students in their classroom exactly the same; however, major differences exist in the way many instructors interact with girls and boys. The report labels this treatment as "subtle and insidious gender lessons, micro-inequalities that appear seemingly insignificant when looked at individually, but have a powerful cumulative impact" (para. 1). In addition, Pollard (1998) found teachers need to learn about history and culture of their students so they can incorporate students' everyday experiences into routine learning opportunities. Malloy (2000) challenged teachers: We must be willing to go through the personal changes that ensure academic achievement by all students in mathematics and science. These changes will require us to consider such things as teacher interactions with students, teacher preservice and inservice training, academic groupings of students, learning styles of students, and remediation verses acceleration as it concerns student achievement" (para. 8). Not surprisingly, teachers play a critical role in creating a gender-neutral environment, which validates and encourages all students.

One issue that is often ignored in solving gender equity problems is that males and females have different styles of learning. Jacobs and Becker (1997) cited the AAUW finding that in cooperative learning, "there is evidence that women not only prefer a more collaborative, less competitive atmosphere in the classroom…they achieve more in that milieu" (para. 20). Building a gender-equitable classroom includes the following principles as a guide:

A. Using student's own experiences to build knowledge. "Connected knowing is an important perspective…students build knowledge from personal

experience…encourage activity versus passivity…" (para.7).

B. Writing in the mathematics classroom to explore awareness of the processes. "Writing out explanations helps students to develop their own voices…writing can provide feedback…journals might be used to gather affective and cognitive information from the student" (para. 15-18).

C. Developing a community of learners. Students "validate their answers and generalizations so that their peers as well as their teachers understand and accept their work" (para.46).

The Mid-Atlantic Equity Center (1993) found that a viable factor for providing a gender-equitable classroom includes training teachers to identify and accommodate different learning styles associated with both genders. Koontz (1997) suggested instructional strategies such as Legos, spatial puzzles, and logic games, all of which helped girls learn math concepts. Keogh, Branes, Joiner, and Littleton (2000) found that since boys dominated interaction in computer-based, mixed gender pairs, "girls should work with computers in same-gender groups" (para. 22). However, boys are also stereotyped, and teaching strategies must incorporate techniques appropriate for their needs. Barlow (1999) reported that, "in order to accommodate the later-maturing boys, teachers need to guard against labeling rowdy or disobedient boys as suffering from attention deficit or emotional disabilities" (para. 16). Another consideration lies in adapting standardized assessment tools to accommodate learning styles. Lam (1995) recommended that fair and equitable assessment needs to be tailored to the individual student's instruction context and special background. Clearly, decisions concerning

learning materials need to be made to accommodate learning styles rather than gender stereotypes.

A critical step in solving the problem of stereotypical attitudes towards gender and their effects on academic achievement lies with student awareness of the issues. In addition, teachers must reflect on their own attitudes and teaching styles while examining educational materials. Teachers can be a positive force for change by guiding student awareness and designing lessons and activities, which foster equitable and respectful treatment of both genders. In the next section, the action research objectives and action plan, developed in the Fall of 2000, are presented. The purpose of the plan was to increase student awareness of stereotypical attitudes and provide opportunities to lessen biased behavior in the classroom setting.

Project Objectives and Processes

As a result of creating a learning environment that replaced gender stereotyping with a gender-neutral attitude among students during the period of January 2001, through May 2001, students at Sites A, B, and C will be aware of gender bias and decreased stereotypical attitudes towards gender to some degree. This change will be measured through the use of a human bar graph survey, cooperative learning checklists, disciplinary action tally sheets, and an open-ended student survey.

In order to accomplish the project objective, the following processes are necessary: creating cooperative learning groups, using gender-neutral materials whenever possible, and adapting the student environment.

The following methods will be used to create a gender-neutral cooperative learning environment:

A. Redesigning lessons to incorporate cooperative learning.

B. Changing the routine for instructional periods to include varied time blocks for cooperative learning activities rather than individual learning tasks.

C. Changing the physical environment of the classroom by regrouping students into small groups with gender equity.

D. Introducing an assessment strategy in the form of a behavioral checklist, which reflected participation by gender.

These procedures were used to incorporate gender-neutral materials whenever feasible:

A. Adapting materials in the form of lesson plans to reflect neutral gender components identified through the student human bar graph surveys.

B. Using an assessment strategy in the form of a behavioral checklist that reflected disruptive behaviors by both genders.

The subsequent methods sought to adapt the student environment to reflect a gender-neutral perspective:

A. Changing the routine and activity of the day from teacher-directed learning to student-directed learning.

B. Incorporating new teaching strategies to encourage more active learning for students.

C. Introducing an assessment tool in the form of the open-ended student survey with the purpose of lessening classroom gender bias.

D. Providing activities so students may develop new classroom materials, which reflect a gender-neutral attitude.

E. Focusing on student-produced materials to lessen gender bias in the classroom.

Action Plan

The action plan will be conducted at the three sites January 2001, to May 2001. A calendar has been formatted for a 12-week period of data collection. The calendar describes the activity, the subject area, which the activity will address, the assessment tool used, and the recording frequency of the information.

Week 1:

- Cooperative learning groups were used for a fifty-minute instructional time block for two days of language arts activities.
- Cooperative behavior checklist used to record participation by gender.

Week 2:

- Independent study for a fifty-minute time block for Language Arts activities.
- Disciplinary Action Tally checklist recorded for two instructional periods.

Week 3:

- Cooperative learning groups used for three periods of instruction recording data on the Cooperative Behavior Checklist for both genders.
- Math activities at Sites A and C.
- Language arts activities at Site B.

Week 4:

- Disciplinary Action sheets recorded for two periods of independent instruction.
- Independent math activities at Sites A and C.
- Independent language arts activities at Site B.

Week 5:

- Cooperative learning groups of same gender and mixed gender used for three instructional periods with behavior by gender recorded.
- Science activities at Sites A and C.
- Language arts activities at Site B.

Week 6:

- Independent study for two instructional periods recording data by gender on Disciplinary Action Checklist.
- Science activities at Sites A and C.
- Language arts activities at Site B.

Week 7:

- Cooperative learning groups of same gender and mixed gender for three periods of instruction recording data by gender on Cooperative Behavior checklist.
- Social Studies activities at Sites A and C.
- Language arts activities at Site B.

Week 8:

- Independent study for two instructional periods recording data by gender on Disciplinary Action checklist.
- Social Studies activities at Sites A and C.
- Language arts activities at Site B.

Week 9:

- Cooperative learning groups of same gender and mixed gender for two instructional periods recording data by gender on Cooperative Behavior checklist.
- Life skills activities at Sites A and C.
- Language activities at Site B.

Week 10:

- Independent study for three instructional periods recorded by gender on Disciplinary Action checklist.
- Life skills at Sites A and C.
- Language arts at Site B.

Week 11:

- Cooperative learning groups for two instructional periods with instruction in language arts at all three sites.
- Cooperative Behavior checklist used to record data by gender.

Week 12:

- Disciplinary Action checklist one instructional period at all sites.
- Open-ended survey at all sites.
- Human Bar Graph survey reflecting attitudes administered at all three sites.

Week 13:

- Tabulate results from Cooperative Behavior checklists from all sites.
- Tabulate results from Disciplinary Action checklist from all sites.
- Tabulate results from Open-ended survey from all sites.
- Tabulate results from human Bar Graph survey from all sites.

Week 14:

- Share results with students.
- Students design their individual concept of gender-equitable classroom.

Each site will develop lesson plans to be used in cooperative learning groups. The two special needs sites will use cooperative learning groups with a variety of subject matter and will vary the time of day every two weeks. The third site will gather data from cooperative learning groups during designated language arts class and will vary the times within that period.

Each site will use the behavior tally sheets concurrently with cooperative groups. The data recorded will reflect any time the teacher must redirect student behavior whether it is done verbally, visually with a look, or physically by interrupting the lesson to correct inappropriate student interaction.

The open-ended survey will be complied during the final week of data collection at all sites. The students will express their perceptions of the learning environment in the area of stereotypical gender attitudes.

The human bar graph measuring gender attitudes will also be administered on the final day of data collection at all sites. The results of the human bar graph will be compared with the survey, which was used in the fall as evidence of the problem. All sites will compile the data collected during the twelve-week period. The results will be formatted into visuals of graphs and narration.

Methods of Assessment and Assessment Instruments

Teachers at Sites A, B, and C will develop several assessment instruments including a Human Bar Graph Survey, a Cooperative Learning Behavioral Anecdotal Checklist, a Disciplinary Action Tally Sheet, and an Open-Ended Student Survey. The human bar graph will include 18 statements of gender bias and will allow the students to agree, disagree, or remain neutral in each area. The survey will be administered prior to and subsequent to the intervention. The anecdotal checklist will be used throughout cooperative learning activities to chart the behaviors of students in the learning groups. The tally sheet will focus on gender-directed disciplinary actions. During designated time periods, the need for teacher intervention will be recorded according to gender. The open-ended survey will involve students in identifying items, which reflect stereotypical attitudes and recommend changes to establish ideal gender-equitable learning environments.

CHAPTER 4

PROJECT RESULTS

Historical Description of the Intervention

The purpose of the project was to decrease stereotypical attitudes toward gender in the educational setting. During the fall semester, students responded to a Human Bar Graph Survey, which documented the problem of gender stereotypes. In order to affect student attitudes, lessons were rewritten or adapted to make use of gender-specific materials in the learning environment as well as become aware of gender-biased learning materials. Two teacher-developed assessment tools noted student interaction: an anecdotal behavior checklist and a discipline tally sheet. At the end of the project timeline, students were asked to suggest changes that could be made to produce a more gender-equitable environment, complete an open-ended survey reflecting gender bias, and again participated in the human bar graph survey to determine if attitudes had changed.

The students at Site A were teamed in to cooperative learning groups for instructional activities in math, language, science, social studies, and life skills. The math activities consisted of buying certain items from the grocery store. The students actually played "store," each taking turns being the buyer and seller. The students were to count change received, use a calculator for computation, and

make choices. The language arts activities included the dictionary game and the card catalog game. Each student had the responsibility of looking up words using guidewords, finding the word, running up to the front of the room to ring a bell and answering correctly. The teams were allowed to work together if needed. They conversed to determine which word usage meaning to report. The card catalog activity consisted of teams that had to find a book in the library before anyone else. Portions of the card catalog were in a packet for each team. The groups were allowed to be together in finding the book. The science activities consisted of creating a new animal from two animals that were opposite in many ways. They were each assigned different roles in creating this new animal. The activities for social studies focused on the presidential election. Each group had to list as many presidential qualifications needed to become president. The students were also involved in a mock election and the campaigning process with their groups. The activities for life skills consisted of using a phone book to look up necessary numbers and actually calling certain places to get information. The teams practiced before making calls.

There were seven students involved in the activities in which only two were boys. This made it extremely difficult for effective gender-equitable grouping. This also didn't allow opportunity for more than two cooperative groups. The combinations of the groups were changed as much as possible every two weeks. During the 12 week time period, the students did the assignments and were able to work well together for the most part, but their stereotypical attitudes toward

gender did not change very much from the beginning of the study to the end, indicated by the human bar graph.

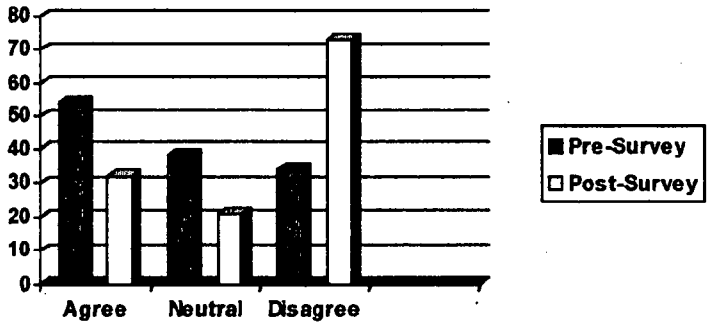

Figure 1: Stereotypical Attitudes Survey Statements at Site A

The students at Site B were teamed in cooperative groups for three major activities during the action research activities. One lesson required them to work together in gathering research as background for Steinbeck's novel, Of Mice and Men. Another assignment involved evaluating peer writing using the school writing rubric, and the third entailed completing a study guide and reviewing for tests over Chinua Achebe's Things Fall Apart. Because of the disparity in the number of girls to boys (8 girls and 17 boys), balancing the groups by gender was not possible. The time of the action plan was altered to accommodate curriculum and state testing. The calendar was altered as follows: beginning the first week of April 2001:

Week 1: Students were assigned to groups in order to try to achieve gender equity as much as possible. Group members chose the decade they would research as a part of background for Of Mice and Men.

Week 2: Students presented the results of their research to the class, using a Power Point presentation.

Week 3: Students prepared for the ACT testing by reviewing reading techniques and evaluating other students' writing using the state rubric.

Week 4: Students began reading the novel Things Fall Apart. They worked in cooperative groups to complete the study guide.

Week 5: Students continued the novel as well as completed a letter which had been part of a critical thinking activity.

Week 6: Students continued to read the novel and created their own "chi" masks, choosing their own group members.

Week 7: Students finished the novel and took a final test.

Over time the students accomplished the assigned tasks and generally treated each other with respect in regard to gender; however, their stereotypical attitudes toward gender changed very little as indicated by the results of the human bar graph.

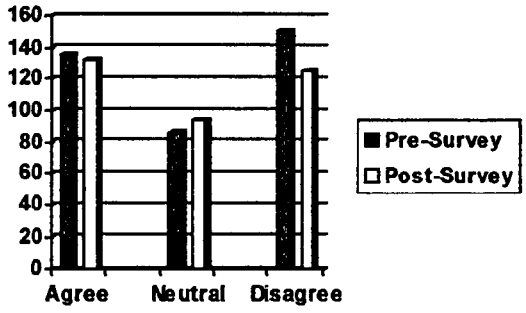

Figure 2: Stereotypical Attitudes Survey Statements at Site B

The students at Site C were teamed into cooperative groups for instructional activities in math, language arts, science, social studies, and life skills during the action research activities. The lesson in math consisted of student groups of three selecting a recipe and using grocery store ads to locate and record cost of each item. There were two separate activities for language arts. The first activity required each group of three to use a dictionary and magazines to depict meanings for each of the five words given to each group of three. The second activity required each group to locate the definition of vocabulary words from the story to be read aloud to the class. The activity for science consisted of each group being given a matrix chart of six animals and their characteristics. Each group had to take the information and create an animal of their own selecting and combining characteristics from the matrix. The activity for social studies was centered on President's Day. Each group was to list ten presidents and at least one thing that he had accomplished in the White House. The activity for life skills required each group to grocery shop for a family of four for three meals using store ads to locate

items and determine cost using calculators. Because of the composition of the class, 8 girls and 7 boys, balancing the groups by gender was possible. Two groups of the same gender, one all male and one all female, and three groups of mixed genders were used. The combinations of the group members were changed every 2-week period. During the 12-week period, students accomplished the assigned tasks and generally treated each other with respect to gender, however, their stereotypical attitudes toward gender changed very little as indicated by the results of the human bar graph.

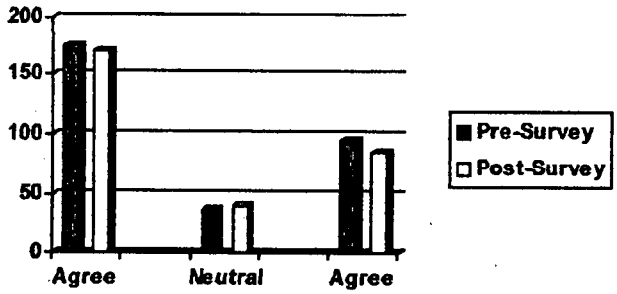

Figure 3: Stereotypical Attitudes Survey Statements at Site C

Presentation and Analysis of Results

The Cooperative Learning Behavioral Anecdotal Checklist was used to collect data at all three sites. Positive and negative behaviors were recorded, however, the bar graph reflects only positive behaviors since the negative can be assumed from them. Cooperative learning groups were of same-gender and mixed-gender whenever possible. The composition of the groups was changed every 2-week period.

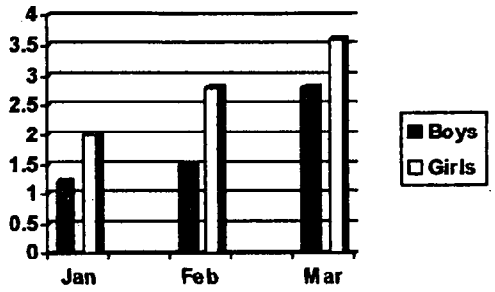

Figure 4: Cooperative Learning Behavioral Anecdotal Checklist at Site A

At Site A, very little change in behavior was demonstrated throughout the three-month period. The students were slightly more conscious of their actions, however, not significantly enough to show in the data.

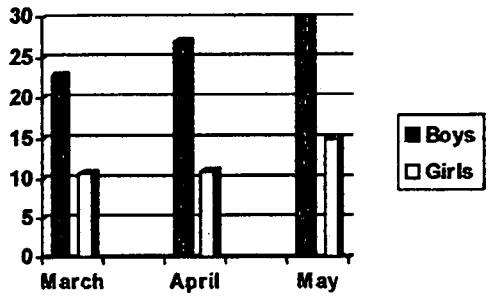

Figure 5: Cooperative Learning Behavioral Anecdotal Checklist at Site B

The Cooperative Learning Behavior Anecdotal Checklist was used to collect data from both positive and negative behaviors. At Site B, very little change in behavior was demonstrated throughout the 3-month period.

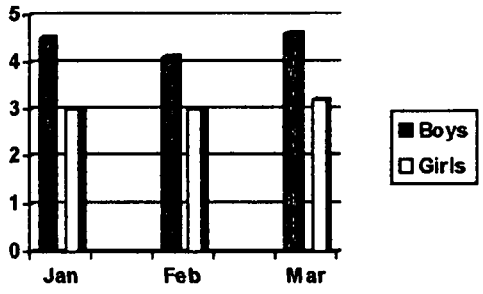

Figure 6: Cooperative Learning Behavioral Anecdotal Checklist at Site C

The Cooperative Learning Behavioral Anecdotal Checklist was used to collect data from both positive and negative behaviors. At Site C, very little change in behavior occurred during the three-month period of collecting data. The slight increase in boys may be due to the fact that there were two more boys than girls in the class creating unequal group formations.

A Disciplinary Action Tally Sheet was used to record any time the teacher or instructional aide had to redirect either verbally, physically with a look, or to observe inappropriate interactions with fellow students during language arts at all three sites, and math, science, social studies, and life skills at Sites A and C.

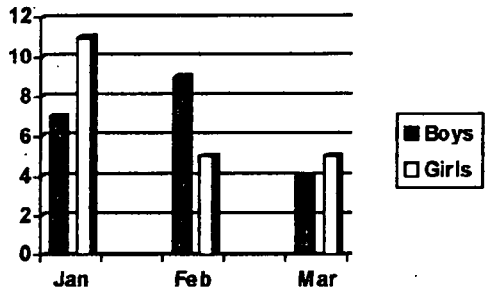

Figure 7: Disciplinary Action Tally Sheet at Site A

The Disciplinary Action Tally Sheet at Site A indicated a decrease in disruptive behavior among boys and girls over the 3-months of data collection. The most significant change in behavior was between January and February, but did not change much between the last 2-months.

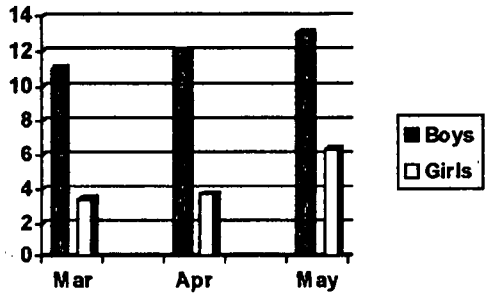

Figure 8: Disciplinary Action Tally Sheet at Site B

The Disciplinary Action Tally Sheet at Site B indicated an increase in disruptive student behavior over the 3-month period, with pronounced increase occurring in female behavior in May. This may be due to the increase in male student absences among those who had no hope of passing the class.

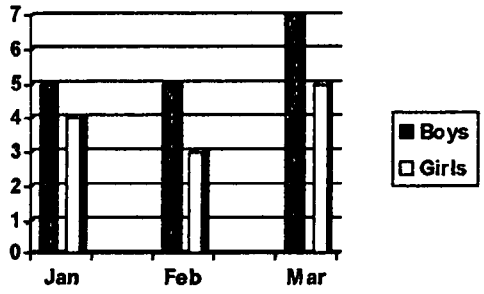

Figure 9: Disciplinary Action Tally Sheet at Site C

The Disciplinary Action Tally Sheet at Site C indicated an increase in male disruptive behavior over the 3-month period of data collection. Personalities and documented disabilities may have contributed to the results.

The Open-Ended Student Survey was administered at all three sites during the last week that data was collected. At Site A, the survey indicated that boys believed that there were more gender specific items favoring females in the classroom. The survey also indicated that both boys and girls were interested in computers, helping teachers, and sport related activities. At Site B, the survey revealed mixed results in the number of gender-specific items in the classroom but predictable results insofar as attitudes about what kinds of activities appeal to each gender. Students did identify music, video games, and computers

During the last week of data collection, the Human Bar Graph Survey was administered at all sites. At Site A, the graph indicated some change in beliefs from the time it was first administered (November 2000) to the second time it was administered (April 2001). The survey showed that the students did become more aware of gender related issues, and seemed to change their views from the beginning. The students put their heads down and raised their hands in order to have a genuine answer and not what their friends answered. At Site B, the graph rendered mixed results. Some students were obviously influenced by their friends into joining one or the other of the opinion groups. The wording of the questions confused others. Some questions were stated in a negative fashion so the students were not sure what disagreeing would really mean, and other questions included absolutes such as "always" or "never" which also influenced student judgments.

At Site C, the survey was administered with the students making blindfolds to be used as the eighteen statements were read aloud. The students stood by their desk as each statement was read. A step to the right indicated the student agreed with the statement. A step to the left indicated the student disagreed with the statement. The student not moving indicated he/she was neutral in his/her opinion. The results reflected a slight change in attitudes from the initial survey in November 2000 to April 2001.

Conclusions and Recommendations

Based on the observed behaviors of boys and girls at Sites A, B, and C, throughout the intervention, conclusions and recommendations can be made as to what stereotypical attitudes both genders acknowledged and what few changes in attitude have occurred.

The analysis of the data collected from all three sites did not reflect a marked difference in stereotypical attitudes toward gender. The cooperative learning groups provided the most opportunities for both genders to work together. Grouping of mixed gender and same gender cooperative groups was equally affective in providing equal opportunities to assume leadership roles. Both genders were able to share such jobs as recording, reporting, and illustrating.

The Disciplinary Action Tally Sheet reflected slight differences in disruptive behavior by gender. At Sites A and C, the boys were slightly more disruptive during independent study. At Site B the females had a slight edge to

disruptive behavior, which may have been due to high absences by the males who were failing the class.

The Human Bar Graph Survey administered at the end of the twelve week period reflected marked changes in attitudes on eight of the eighteen statements; 55% of the students changed their attitude from the initial survey to the final survey at the end of the 12 week period.

The Open-Ended Survey provided insight into attitudes at all three sites. Sites A, B, and C, the boys agreed that video games, sports, and cars were favored. The girls at Sites A, B, and C, preferred shopping, music, and talking on the phone. At Sites A, B, and C, both genders agreed that both genders enjoyed music, videos, and computer games.

One of the easiest and most successful tools to encourage the lessening of stereotypical attitudes between both genders of diverse abilities is to provide cooperative learning opportunities across the curriculum for a minimum of two periods per week. The roles are constantly changing, with every student having the opportunity to lead and actively contribute.

Another successful tool for building awareness of existing stereotypical attitudes is to conduct a survey of stereotypical attitudes at the beginning of the year. The survey should be written with attention to wording, avoiding negative statements, and the absolutes such as "always" or "never." Once the survey is completed, it can be discussed in an open format. This will provide the teacher with an understanding of the basis of what the students' beliefs and attitudes are

based upon. Once the baseline is established, then attitudes can be more readily recognized.

The final recommendation is that the teacher becomes more aware of the classroom environment. Gender-equity needs to be a part of the climate; what posters are displayed, where students are allowed to sit, what textbooks are selected and how the teacher responds to the needs of all students regardless of gender.

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APPENDICES

Student Human Bar Graph Survey

Date_____

Question	Agree	Neutral	Disagree
It is okay for boys to cry.			
Girls shouldn't be allowed to play on boys' teams.			
It is not okay for boys to play with dolls if they want to.			
It is not okay for girls to play with trucks if they want to.			
Boys get into trouble more often than girls do.			
Girls are better readers than boys are.			
Boys are better at math than girls are.			
Teachers punish boys more often than they punish girls.			
A girl could never grow up to be president of the United States.			
Boys are troublemakers; girls well behaved.			
Girls do neat work; boys do sloppy work.			
Boys are good at math and science.			
Girls are good at spelling and reading.			
Boys are better at science than girls are.			
Boys are better at physical education than girls are.			
Girls get better grades than boys do.			
Boys don't like school; girls like school.			
Boys are better at using computers than girls are.			

Cooperative Learning Behavioral Anecdotal Checklist

Date_____

Behavior	Girls	Boys
On task behavior (Everyone contributing)		
Effective communication during work		
Put Downs		
Encouragement/Helpful Behavior - Peer		
Non-participation during group work		
Disruptive Behavior during group work		
Other observed behavior		
Total		

Disciplinary Action Tally Sheet

Date_____

Duration: 50 Minute Time Block, AM/PM

Action occurred	Girls	Boys
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Total		

Open-Ended Student Survey: Gender Bias in the Educational Environment

Date: _____

1. How many items or other objects in your classroom remind you of boys and their interests?

Pictures/Posters	Number of yes items:	Number of no items:
Books	Number of yes items:	Number of no items:
Objects	Number of yes items:	Number of no items:
Other	Number of yeas items:	Number of no items:

2. How many items or other objects in your classroom remind you of girls and their interests?

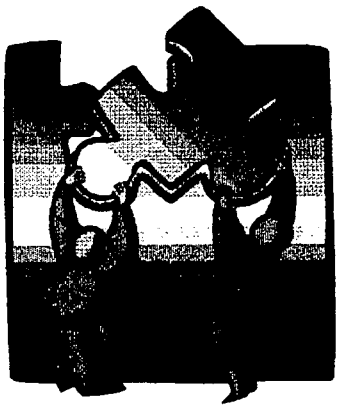
Pictures/Posters	Number of yes items:	Number of no items:
Books	Number of yes items:	Number of no items:
Objects	Number of yes items:	Number of no items:
Other	Number of yes items:	Number of no items:

3. In your opinion, what kinds of activities do boys like?
   A. D.
   B. E.
   C. F.

4. In your opinion, what kinds of activities do girls like?
   A. D.
   B. E.
   C. F.

5. What things that you listed above would both girls and boys enjoy?
   A. D.
   B. E.
   C. F.

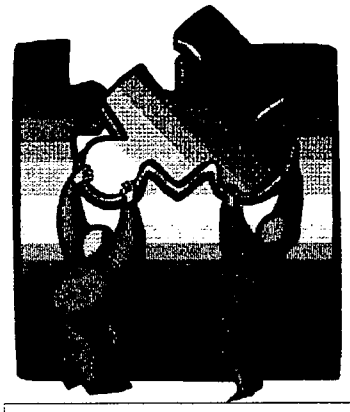
6. List three changes you would make to help change the classroom to reflect the interests of girls and boys.
   A.
   B.
   C.



Stereotypical Attitudes Towards Gender: An Ongoing Problem

January

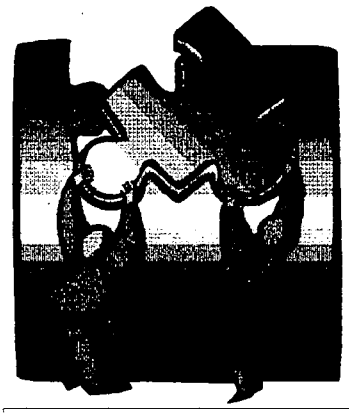
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8 Coop Learn Group Act-Lang Art, All	9	10 Coop Learn Group Act-Lang Art, All	11 Finals, Sites BC	12 Finals, Sites B&C	13
14	15 No School, All Sites	16 Discip Act Tally, 50 min Instruct Time-Lang Art, All	17	18 Discip Act Tally, 50 min Instruct Time-Lang Art, All	19	20
21	22 Coop Learn Group Act, Sites A&C-Math Site B-Lang Art	23	24 Coop Learn Group Act, Sites A&C-Math Site B-Lang Art	25	26 Coop Learn Group Act, Sites A&C-Math Site B-Lang Art	27
28	29	30 Discip Act Tally, 50 min Instruct Time, Sites A&C-Math Site B-Lang Art	31			
	Jen at Site A will develop lesson plans for her students in all categories of instruction	Jo at Site B will develop lesson plans for her students in Lang Arts	Brenda at Site C will develop lesson plans for her students in all categories of instruction			



Stereotypical Attitudes Towards Gender: An Ongoing Problem

February

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 Discip Act Tally, 50 min Instruct Time, Sites A&C- Math Site B-Lang Act	2	3
4	5 Coop Learn Group Act, Site A&C-Science Site BLang Art	6	7 Coop Learn Group Act, Sites A&C- Science Site B-Lang Art	8	9 Coop Learn Group Act Sites A&C- Science Site B-Lang Art	10
11	12 No School	13 Discip Act Tally, 50 min Instruct Time Sites A&C- Science Site B-Lang Art	14	15 Discip Act Tally, 50 min nstruct Time Sites A&C- Science Site B-Lang Art	16	17
18	19 Coop Learn Group Act Sites A&C- Social Studies Site B-Lang Art	20	21 Coop Learn Group Act Site A&C- Social Studies Site B-Lang Art	22	23 Coop Learn Group Act Site A&C- Social Studies Site B-Social Studies	24
25	26	27 Discip Act Tally, 50 min Instruct Time Site A&C- Social Studies Site B-Lang Art	28			



Stereotypical Attitudes Towards Gender:
An Ongoing Problem

March

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2 Discip Act Tally, 50 min Instruct Time Site A&C-Social Studies, Site B-Lang Art	3
4	5 No School	6 Coop Learn Group Act Sites A&C-Life Skills, Site B-Lang Art	7	8 Coop Learn Group Act, Sites A&C-Life Skills, Site B-Lang Art	9	10
11	12 Discip Act Tally Sheet, 50 min Instruct Time, Sites A&C-Life Skills, Site B-Lang Art	13	14 Discip Act Tally Sheet, 50 min Instruct Time, Sites A&C-Life Skills, Site B-Lang Art	15	16 Discip Act Tally Sheet, 50 min Instruct Time, Sites A&C-Life Skills, Site B-Lang Art	17
18	19	20 Coop Learn Group Act Lang Arts, All	21	22 Coop Learn Group Act Lang Arts, All	23	24
25	26 Discip Act Tally Sheet, 50 min Instruct Time, Lang Arts, All	27	28 Open-Ended Survey, All sites will do Blueprints	29	30 Attitudes Survey used for Human Bar Graph admin at all sites	31
	Results from Coop Learn Group Act and Discip Tally Sheet will be tabulated.	All tabulations complied into bar graph and pie chart visuals.	Human Bar Graph will reflect attitudes from beginning of study to the end of the study.			

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