Attitudes and Participation in Gender Specific Math Classrooms

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Abstract

What happens to participation, attitudes toward math, and teaching strategies when students are in math classes that are separated by gender? During this study I researched ways in which boys and girls learn differently in mathematics. This study also discusses the benefits and problems faced in gender-specific classes, like participation in class as well as students’ attitudes toward math. This study took place in two seventh-grade middle school math classrooms, one having all boys and one all girls. The students were chosen for this study based on parent permission. The students were observed and monitored throughout the second semester of the 2010-2011 school year. Methods used to collect data were interviews, pre- and post-surveys, student interviews, student work, and observations done by the teacher. By the end of the study, I found that gender-specific classrooms did not have a significant effect on students’ participation or attitudes about mathematics.
My interest in gender specific classrooms really peaked this year during my sixth-hour math class. I looped with my seventh grade math students into eighth grade. During this first year of looping I noticed quite a bit of change in the girls, but not with the boys. By change, I mean in maturity and behaviors. I wondered what it would be like to have one all-girls class and one all-boys class. The way my classes were scheduled my sixth-hour class was made up of 13 boys and only 5 girls. With that class makeup I felt I was already getting a small taste of what an all-boys class would be like. This turned out to be a very rough class for me and I felt bad for the girls because I spent a lot of time redirecting the boys and not being allowed to do as much teaching as I should have. If I had the chance to split them up, I would have done it in a heartbeat.

From my experience in this class, I started to look into the topic of single-sex/gender specific classrooms to see what they were about. Normally one only hears of single-sex classes when dealing with an all-girls or all-boys school, but it is becoming more common for public schools to incorporate them into their schedule where they see a need for them. During my research it was encouraging to see research and articles out there about single-sex classes.

**Problem Statement**

The problem of practice I chose for my research deals with single gender classrooms and the different impacts these classrooms have on motivation, participation, communication and the students’ attitudes toward math. I also looked at how my teaching would need to change. This topic intrigues me because in years past I have had quite a few classes overloaded with either males or females and they were not always the most productive classes for the opposite gender. In research that I have read the common thing I continue to come across is how boys and girls learn differently. I have not quite seen that in my all-boys class and my all-girls class.

This problem of practice relates to the National Council of Teaching Mathematics Principles and Standards of equity, teaching and communication. The principle of equity was
chosen because I want both the boys and girls to be able to achieve to their highest abilities, but that means I may not be doing the same activities or lessons in both classes. The end goal is of course the students learning of mathematics, but how the students get there may be completely different in the two classes.

Then of course there is my teaching: I know this is going to have to change. According to different articles and research I have read, boys and girls learn differently, and much of that has to do with the types of activities they are presented with or how the instruction is given. By focusing on the way each gender learns best, my plan was to adapt my teaching so the students are motivated and excited to come to math class every day. I hoped to learn enough from my research of single-gender classrooms to become more successful in my regular classrooms. In the long run I hope I would gain enough knowledge to be more effective in any type of classroom.

The last standard my research topic relates to is communication. In all of my classes there is a need to communicate math better with one another, as well as communicate their questions and ideas more clearly. Girls have a tendency to not participate as much in regular classrooms due to the fact boys tend to be more outgoing and outspoken and tend not to care as much if they are wrong. Hopefully, by having an all-girls class, the girls will become more confident to participate, ask questions, and share their findings. I am not as concerned with the boys in this area as I am with the girls. No matter what type of classroom I am dealing with, the biggest problem I face is student not communicating what they want in correct mathematical language. I hate getting the statement, “I don’t get it.” The students need to learn to be specific about what they do not understand and how to ask using proper terminology.
In my ideal classroom I would be able to meet all the students’ needs and keep them on task for the entire period. The students would love to come to math class and share what they have learned and not be afraid to ask for help. Everyone would be motivated to learn and would do their homework every night. I know this is not going to happen in every class that I teach. However, if I can figure out what makes the girls learn differently from the boys, then I may be able to find a way to make that happen in all of my classes.

**Literature Review**

In the following literature review three major themes will be discussed in regards to gender specific classrooms. One of the themes will talk about how students’ attitudes toward math changes or not by being involved in a gender-specific classroom. The next theme will focus on how students’ participation increases or decreases by being in a gender-specific classroom. The final theme will discuss how teaching in a gender-specific classroom needs to change in order to maximize effectiveness.

**What happens to students’ attitudes toward math when they are in gender specific classrooms?**

A student’s attitude toward a certain subject can dictate how well he or she does in the classroom, as well as how motivated the student is when he or she enters the classroom. When attitude is discussed in the classroom, there are many factors that play into a student’s attitude toward math. Some factors that influence a student’s attitude toward math are home support, teacher support, social factors, and the student’s motivation in general.

In 2006, Wills, Kilpatrick, and Hutton conducted research in a Tasmanian primary school to look at social and academic outcomes from gender-specific classrooms. Parents, teachers, and students were surveyed, observed and interviewed during the course research. Overall, the research found there was a benefit for students and teachers in gender specific classroom. According Wills, Kilpatrick, and Hutton, parents claimed their children’s attitudes about school
Gender Specific Math Classes

improved when the school introduced gender-specific classrooms. “Being in the all-girls’ class has increased my daughter’s enthusiasm. She has become more responsible and has learnt to be more resilient” (p. 285). Many parents surveyed felt the same way about the gender-specific classrooms, the classes helped their son or daughter become better students and increase their child’s enjoyment of going to school.

No matter what type of class a student is in, co-educational or single-sex, if the student’s attitude is poor toward math, then the student tends to not try as hard. Parents and teachers also play an important part in a student’s attitude toward math. “Parents’ and teachers’ attitudes toward mathematics and toward viewing their children as learners of mathematics affect the children’s own perception of their competence and the value they ascribe to the domain” (Chouinard, 2008, p.130). Home lives, as well as social factors, affect how a student feels toward school. A teacher also affects how a student feels about certain subjects. If the teacher makes the subject enjoyable and the student feels successful in the class, then the student is more likely to have a better attitude toward the class and want to come to it.

Chouinard (2008) looked at 340 girls in grades seventh to 11th for three academic years. During the three years the girls had to fill out questionnaires concerning parent and teachers’ support, competence beliefs, utility-value, and achievement goals in the areas of math and language arts. By the end of the study, Chouinard found that no matter what type of school the girl attended, single-sex or co-educational, there was little impact on girls’ achievement motivation.

Preckel, Goetz, Pekrun, and Kleine (2008) found that gifted and average-ability students do not differ much in their attitude toward mathematics. During the study students were tested on achievement and then given questionnaires over self-concept, interest, and motivation in
math. The findings from the study showed that gifted males had a much higher attitude for math than the average-ability male students. However, with the females there was no significant difference between the gifted and average-ability females. “We found a consistent pattern of unfavorable mathematics-related attitudes in girls and a consistent pattern of more favorable attitudes in boys” (p. 156). Therefore, something needs to be done in order to increase girls’ attitudes toward math and to continue keeping the boys interested in mathematics.

Although Wills, Kilpatrick and Hutton (2006) focused on primary grades, they discovered that single-sex classrooms helped with students attitudes toward school as well as helped motivate the students to do better in classes. Preckel, Goetz, Pekrun, and Kleine (2008) looked specifically at the genders among sixth grade students and not what type of class the student was in, single-sex or co-educational. The researchers found that girls had a poor attitude toward math and that perception had nothing to do with the student’s skill level. Preckel, Goetz, Pekrun, and Kleine (2008) also discussed that interventions needed to be done in order to help increase girls attitudes toward math and one recommendation the researchers offered was single-sex classrooms. Thus, in Chouinard’s (2008) research on seventh to 11th grade girls in single-sex and co-educational classes he discovered that single-sex or co-educational schools had little impact on girls’ motivation and attitudes toward math.

**What happens to the level of student participation in gender-specific math classrooms?**

Baker and Jacobs (1999) found that girls preferred the single-sex classes because girls were more supportive of each other. “Girls said they were more willing to participate in the single-sex classroom and were less embarrassed without the boys” (p. 5). Girls feel more comfortable in class without the boys, but many are afraid to admit to the fact they can concentrate better when boys are not around.
Baker and Jacobs (1999) found some interesting outcomes. The research was done in two seventh-grade math classes and two seventh-grade science classes and involved approximately 100 students over the course of seven months. University interns interviewed the students in the different classes and kept journals of observations they had in each of the classes. The results at the end of the study indicated that the girls were more successful in the single-sex classroom than the boys, but both genders missed out because the teachers did not change their teaching styles to fit the needs of the classes.

Rex and Chadwell (2009) discuss the various ways in which school districts have incorporated single-sex classrooms, the legality of single-sex classrooms, and the success of single sex classrooms in South Carolina. Rex and Chadwell made reference to gender-based performance gaps between boys and girls between grades three and eight. These performance gaps generally occur in language arts and math. The researchers also wanted to make clear the regulations for single-sex classrooms in the public school setting. Regulations that should be looked at are:

1.) Single-sex classrooms must be completely voluntary.
2.) Single-sex classrooms must be equal for boys and girls.
3.) Single-sex classrooms must be reviewed every two years.

Rex and Chadwell gave three factors that would make for implementation of single-sex classrooms a success. The implementations were:

1.) On-going training for teachers on how gender influences learning.
2.) Communication with parents about single-sex classrooms so they may make an informed decision.
3.) Analyze data for the need and impact of single-sex classrooms.
In a survey done on a group of students in single-sex classes, these students believed they participated in class more often and had an increased willingness to try new learning activities (Rex & Chadwell, 2009).

Ferrara and Ferrara (2004) discussed a study done in Ellenville Central School District over a three-year period. The students placed in the single-sex classrooms were chosen based on parent permission. The researchers collected data the first year from the students’ grades and test scores, teacher surveys, and interviews of teachers, students, and principals. At the end of the study, research indicated that the boys’ classes were behind in the curriculum compared to the girls’ classes. The behaviors from the boys’ classes were far worse than the girls. Ferrara and Ferrara (2004) made a point to say at the end of the article, “no matter what you teach you must continue to study your craft in order to help students in all environments learn” (p. 30). The researchers are saying no matter what type of students are in the classroom or how the classrooms are set up, there is always a need to continue going to professional development, conferences, and higher education to keep current on what works best with students.

An ongoing theme among these authors is that participation was increased when students were placed into single-sex classrooms. Boys and girls participated more often and were less self-conscious about their academic work in single-sex classrooms (Ferrara and Ferrara, 2004). However, a point was made by Baker and Jacobs (1999) that contradicted the previous research of Ferrara and Ferrara. The contradiction was teachers and boys enjoyed having girls in class because it made for a calming effect. Also according to Baker and Jacobs, “The presence of girls made boys feel smarter and like they were learning because the environment was quieter and less chaotic and the girls helped the boys, enabling them to finish tasks” (p.7). Overall boys found having girls in their classroom was more beneficial than single-sex boys’ classrooms.
According to the 2004 Ferrara and Ferrara study done in New York, the greater number of boys in a classroom caused for more horseplay. “Less was accomplished in boys classes due to disciplinary problems” (Baker and Jacobs, 1999, p. 7). The discipline problems will vary from class to class based on the makeup of boys present and the classroom management of the teacher. However, in Smith’s 1999 study it was shown that teachers believed there were less discipline problems in single-sex classes.

Anfara and Mertens (2008) discuss if there are benefits to single-sex schooling and how did single-sex schooling come about. The researchers talked about the issues with single-sex schooling as well as the problems with the research on single-sex schooling. Anfara and Mertens made arguments for and against single-sex schooling, but did not say which type was better, single-sex or co-educational. One reason the researchers were for single-sex education was due to the achievement gaps in boys and girls. This was one reason given by Rex and Chadwell (2009) as well. A reason against single-sex school is it is not preparing the students for the real world. Anfara and Mertens also agreed with Smith’s 1999 findings, that teachers believed there were fewer discipline problems in single-sex classes (Anfara & Mertens, 2008).

*What happens to my teaching when I attempt to increase student class participation and improve attitudes toward math in gender-specific math classrooms?*

Teachers have to change their teaching strategies in order to meet the needs of boys and girls (Ferrara and Ferrara, 2004). “Males seem to thrive in a competitive and aggressive learning environment, while females seem to benefit most from a supportive and cooperative setting” (Smith, 1999, p. 3). Teachers often forget the importance gender plays in the learning of each student, as well as, the behaviors produced by each gender.
With the ongoing research being done on how boys’ and girls’ brains work differently, teachers need to be aware of these factors when planning lessons and activities for each specific gender. Ferrara and Ferrara (2004) stated, “Differences in gender also have been associated with various ways in which students take in information and process it” (p. 28).

Gurian, Stevens, and King (2008) gave insight into the way boys and girls think and process differently. Their book talks about practical activities and approaches to use in the classroom to focus on boys’ and girls’ unique strengths. The authors start off by explaining the brain and how it works differently in boys and girls. From there they give many strategies to use in the classroom for boys and girls.

According to Gurian, Stevens, and King’s book (2008) a few major differences between boys and girls when it comes to their brain development are:

1.) Girls think more verbally and use more words then boys.

2.) Boys rely more on pictures and moving objects when they write.

3.) Boys have rest states many times during the day (zoning out, sleeping in class) and to avoid these they tend to tapping or poking things.

4.) Girls are better at multitasking, where boys tend to need more transition time between tasks.

5.) Boys are naturally more aggressive, competitive, and impulsive.

In Bakers and Jacobs’ 1999 research, if teachers do not make the kinds of curricular and pedagogical changes needed to support both sexes, then everyone loses when it comes to single-sex classes. According to Rex and Chadwell (2009), one of the most important implementation factors needed when starting a single-sex classroom is “training for teachers to better understand how gender can influence learning and supporting teachers throughout the year as they reflect on
their practice” (2009, p. 4). Ongoing education needs to be done by teachers to maximize the benefits of single-sex classrooms. According to Anafara and Mertens (2008), teachers need to remember that boys and girls are “wired” differently and that means that they also learn differently.

**Summary**

In much of the research presented, researchers found some aspects of gender-specific classrooms to be beneficial. However, in many cases it was found that gender-specific classrooms did not have much of a benefit overall. To make gender specific classrooms work the teachers need to have background knowledge on how the different genders learn and behave. The teachers also need to continue their education of the topic by attending conferences and going to professional development. Just like in co-educational classrooms, it is the teacher who can make or break what is being learned and how they teach the content to students.

In my study, I also will be looking at one all-girls math classroom and one all-boys math classroom. The study will focus on students’ attitudes, participation, and how my teaching will need to change. This is unique to the other studies because I will be focusing on seventh-grade pre-algebra, where the other studies focused on a range of grade levels or multiple subjects in one grade. It is similar to many of the studies due to the topics I am focusing on, students’ attitudes, participation and changes in teaching. By the end of this study I hope to have more data to determine whether gender-specific classrooms have an effect on students’ attitude and participation.

**Purpose Statement**

I think this problem is worthwhile, because in my years of teaching middle school math, the gaps between boys and girls socially, emotionally, and sometimes academically have become
more significant. By having a single-gender classroom I hoped to learn what makes each gender tick better and how to address each gender’s specific needs. Do the boys need more hands on work or do worksheets cut it? How much motivation and cheering on do the girls need to help them see they can do math and it is not a boys’ subject? The needs in both classes can be quite different, but by the end I hoped the students would have become stronger in their math knowledge, stronger in communicating math and their needs, and have a stronger desire to want to do math.

As a building, my school could take from my research ways to reach both genders in the classrooms and what works best for boys and girls. It has already been interesting to see how the students in my single-gender classes act differently from how they do in some of their others. I am not saying they act better or worse for me, they are just different. Will the research I did in my class help out the other teachers that have these students? Did my research help give ideas on how to get the most out of boys and girls in the classroom? How did my teaching have to change in order to be successful with all genders?

All know boys and girls are different in so many ways, I want to see if by separating them, the boys and girls become more motivated in math, participate more, have better attitudes toward math, and can communicate better. By addressing this problem I hope to learn more about the different genders and their learning styles and then adapt some of my findings in my other classes.

**Research Questions**

The purpose of my project is to see if gender specific classrooms impact students’ attitudes and participation in mathematics. I examined the variables of the student attitudes, participation and how my teaching changes, in seeking to answer the research questions:
1. What happens to students attitudes toward math when they are in gender-specific classrooms?

2. What happens to the level of student participation in gender-specific math classrooms?

3. What happens to my teaching when I attempt to increase student class participation and improve attitudes toward math in gender-specific math classrooms?

**Method**

My research was conducted in a large, urban school district. My school serves approximately 520 seventh- and eighth-grade students and employs 39 teachers. In this middle school there is a 74 percent free- and reduced-lunch rate student population. The school has a diverse student population too, with 39 percent Caucasian, 41 percent African American, 18 percent Hispanic, and 2 percent other. The classes selected for my study was representative of the school population. The research data collected came from my fifth- and sixth-period classes. Both classes were seventh-grade pre-algebra rooms.

Mondays, Tuesdays and Fridays I teach a 42-minute class period, while on Wednesdays and Thursdays I teach on a 90-minute block schedule. I see my fifth hour on Wednesday for block and sixth hour on Thursday for block. My fifth-hour class was made up of 22 girls. There were 10 Caucasian students, nine African-American students, and three Hispanic students. Two of the students in this class qualify for special education services with learning disabilities in reading, writing and/or math. In my sixth-hour class there were 18 boys. There were five Caucasian students, nine African American students, and four Hispanic students. Two of the students in this class qualify for special education services with learning disabilities in reading, writing and/or math. There was one student in sixth hour who was English as a second language learner, and one who qualified for speech services.
In order to answer my research questions, I collected several forms of data from February 27 to April 15, 2011. My research began on February 27 in the form of a survey (see Appendix A) over the students’ attitude toward math and how they felt about participating in math class. All 38 students in the two classes who were present that day were given the survey and told to be honest with their answers, and that how they responded had no effect on their grade. They were given a follow up survey on April 11, 2011, to see if any of their answers might had changed in the course of the semester.

On two separate occasions (March 11 and April 8), I interviewed five students from each class (see Appendix B). This interview was used to help me understand why they had the attitude they did about math. In the interview the students had to verbalize with me why they did or did not feel comfortable participating in a gender-specific class and also what their overall opinion was about gender-specific classes.

I also collected students’ work once a week, usually on block day, to assess how they were doing in class, but also to see how many students were actually doing their homework. Block day was twice a week where I saw the students for 90 minutes one of the two days. I felt this was one more way to document if the students were participating in class. This type of participation was not oral, but written. To take into account the oral participation I kept a tally sheet (Appendix C) each week of students who answered questions in class, came up to the board to do something, or even asked a question in class. I tried to keep track twice a week on the sheet and usually picked block day and then one other day to document. Block days were good to focus on because we had an extended period of time that day and the students were usually involved in several different activities those days.
It was necessary for me to document my own thoughts, actions, and observations. This was done in the form of 12 teacher journals, one done for each week of the study per class period. I wrote about the interactions I saw between the students, if certain students were feeling more comfortable participating in class, my methods of instruction, and if it seemed students attitudes were changing about math.

As the data were being collected, I organized them by the research question that each pertained to and the date each was collected. For example, two surveys were used for student participation and their attitude toward math. This made it easier when I was analyzing the data to see if gender-specific classes were making a difference.

There were a few setbacks while collecting the data for this study and most of it could not have been avoided. First of all by the time we received approval to start, it was already the middle of February, therefore my study did not last as long as I had hoped it would have. Second, we had a few snow days in the middle of the study. Lastly, we had to give three state or district tests in the middle of the study so not a lot of new content was being taught; we were just reviewing for a portion of the study.

Findings

A typical day in my classroom during this research period consisted of bell work, notes or example problems, whole group discussion, assignment time, and summary. At the beginning of each class, my students enter the classroom and complete their bell work for that day. The bell work is usually four to eight problems from previous lessons or an introduction into that day’s lesson. While the students complete the work, I take attendance on my computer. Students are given about five minutes to complete these problems, and then we correct and discuss them.
After bell work is put away, we discuss the previous day’s lesson and their homework from the night before. Sometimes I ask the students questions about the previous lesson, and other times they ask me questions about the homework. Assignments are collected after we have finished discussing them. At this time, I like to reinforce that material by material by either doing an enrichment activity that day or a quick review assignment.

New material is covered next if we are not spending another day on the previous topic. Notes are given at this time and I present the new concepts to the students. During the lecture, I try to activate prior knowledge of what we have previously learned this year, what the students had learned in elementary school, or in how the concept applies to their everyday life. From there we do a few guided practice problems together.

When guided practice has been completed, I give the students another in class assignment, game, or task to complete. The activity or assignment is always based on the new material that we had just covered. As students are working on this task, I take the opportunity to walk around the room to observe, question the students, or clarify for the students. I also jot down notes in my journal. When time allows, I also will use the time to glance through the homework I collected earlier to see if there are any areas that they struggled with and need to revisit. Whatever the students do not finish in class, will be their homework which is due the next time their class meets.

**Math Attitude**

To figure out if gender-specific classrooms made a difference in how a student’s attitude in math changed, I looked at three different items. The first item I analyzed was one of the questions from the survey, *I like math*. I graphed the first and second responses to that question and then compared the data for the girls class and the boys class. By looking at the girls data
below notice they did have an increase in the number of girls who agreed or strongly agreed with that question by the time they took the second survey. In the strongly agree category the number of girls increased by four on the second survey and that the ones that disagreed or strongly disagreed decreased in the second survey. Therefore, 14 girls now like math compared to the 11 that liked math at the start of the research, which is a gain of three girls.

I graphed the same information for the boys and notice from the data they too had an increase in the number of boys who liked math. In the first survey only 8 boys said they liked math and by the second survey that number had jumped to 12, an increase of 4 boys. There are still two boys that never changed their minds throughout this study, but other than those two most had some sort of enjoyment for math.
The next thing I looked at to see how the students’ attitude about math changed over the course of the study was to review their interview with me. To try and figure out why students like or dislike math I looked at two of the interview responses. In most of the interviews the boys were not very specific; the only things they wanted to talk about were different topics in math. Sam\textsuperscript{1} said, “I like everything, because I am confident in math.” Charlie could not tell me one thing he liked about math and he even struggled to tell me something he disliked about math. When it came to the girls it was a lot of the same thing. However, instead of being concepts they liked or did not, they talked more about how things get harder, but that was all right with them because they like to be challenged. Sally said, “I enjoy math because there are rules for everything and it is very black and white.” So I did not feel that I received a lot of information to back my question on whether gender-specific classes increase a student’s math attitude. However, none of the students told me they absolutely hated it either.

The last piece of data I reviewed for math attitudes was my teacher observations and notes. What I noticed the most with the girls class on this was the majority of them always tried.

\textsuperscript{1} All names are pseudonyms.
That was not the case in the boys class. There was one boy in particular, Bob, who completely shut down by the end of this study. When I talked to him about it what was going on he said he did not like being in the all boys class, which concerned me. Bob would not elaborate on why, but I was still curious because he got along with all the boys and seemed to be enjoying himself in class. In the girls class their cattiness got in the way of some of them excelling in class. I know one of my girls really turned it around with her feelings about math. She started off complaining about everything we did and would not try on anything. By the end of the study, she still was not the perfect student, but know she would attempt to do the work and not tell me what we were doing was stupid.

April 5, 2011: “Today in class one of the girl’s made the comment how she thought she was ready for the state test and that she was not so intimidated by it anymore. She was really starting to like math even though she was still not the best at it.”

I do not feel, after looking at these three types of data, I could make an assertion one way or another. While I think the students in both classes were enjoying the class and what we were doing, the only data that proves that was the survey question. Otherwise, the other two types of data do not seem to make a solid case one way or the other. Therefore, I would have to say that gender-specific classes do not make a difference in students’ math attitudes.

**Participation**

When it comes to participation I looked at oral as well as written participation (homework). To decide if gender-specific classrooms made a difference in a student’s participation, again I looked at three things. The first thing I did was analyze three questions from the survey the students took. As before, I graphed them so I could compare the first survey to the second survey. All three questions have to do with oral participation in class.
By looking at these three graphs a lot can be said. First of all, the first two in my opinion end up contradicting themselves. The first one shows that most of the girls liked to answer questions in math class, especially by the second survey. However, in the second graph by the time the girls took that survey most of them did not want to participate. By watching how the
class interacted throughout the course of this study, I could see why not many of the girls liked to participate. Some of the girls did not get along by the end of this; many of them would not talk because of the likelihood someone would have a comment to make. It ended up being the same girls participating throughout the majority of the class. This ties into the third graph about anxiety to participate in the gender-specific classroom. At the start of the study it was pretty even on who felt less anxious and who did not. However, by the end more of the girls felt anxious to participate then those who did not. Again, it had to deal with the cattiness that some of the girls started to have toward the end of the study.

March 29, 2011: “I couldn’t get very much of the lesson done today because we had to have a class discussion on appropriate behaviors. This is getting old. Why can’t the girls learn to be nice to one another?”

![I like to answer questions in math class - Boys](chart.png)
The graphs with the boys data over the same three questions contain a lot of the same results. There are fewer boys who felt anxious the second time around, but there are still many of them that do not feel comfortable to participate. The boys class was not catty like the girls, they just wanted to play around more. They did participate, but their participating was shouting out answers and not waiting to be called on. By looking at the graphs alone for the boys and girls, gender-specific classes did not impact their oral participation.

The next piece of data I looked at was the tally sheet. This was a running tally for the block day of each week to keep track of how many times a person answered a question or came up to the board to participate. It also kept track of the students’ homework participation for that
day too. This piece of data is not the most accurate because I would sometimes forget to start recording at the beginning of the class period. Examples of the tally sheets from class are in Appendices D and E.

As can be seen from the tally sheet written participation (homework) was pretty consistent for the course of the study. In both classes the majority of the students turned in their homework on time, which was much better than my mixed gender classes. Especially in the boys class there was always a competition to outdo one another and not many of them wanted to be the kid who did not turn anything in. As far as the oral participation, it was always the same students with a few new ones each week. If I needed to have students come up to the board to do something that received a lot more participation then just answering a question. So again, there is not much data that is supporting gender-specific classrooms increase participation.

The last piece of data I collected for participation came from the student interviews. The same five students in each class were asked if they felt more comfortable to participate during class. Four of the five boys responded it did not matter what type of class they were in. One does not make them feel less comfortable then the other. Sam did mention he felt more comfortable in the gender-specific class because at home he is surrounded by girls and does not always get a say in anything. With the girls class four out of five of them also had no preference what type of class they were in. Sue did say though, “boys make it harder to concentrate because they are loud and off task.” However, Mary said that, “I prefer the girls class because it makes me feel less anxious about participating.”

Once again I do not feel that I have enough support in my data to conclude that participation is affected by gender-specific classes. Even though there are some students who do feel less anxious by being in gender-specific classrooms, they still do not like to participate. I
will say though the written participation was much higher in the gender-specific classrooms compared to my other classes. This was reflected in the students’ overall grade for the class. Between the two classes I only had one student end up failing during the study and two others end up with Ds. In comparison to my other two pre-algebra math classes this was amazing: the majority of the grades in those two classes were Cs and Ds.

**Teaching**

The last part of the study I needed to look at was my teaching. How did I have to change my teaching for the gender-specific classes? Through the use of interviews and my own journal I was able to collect data on my teaching. The first thing I looked at was my teacher journals. The common thread between the weeks of the study was how loud the boys were compared to the girls on daily activities. When it came time to play a game or do some hands-on activity the boys excelled compared to the girls.

March 11, 2011: “Why didn’t the girls get as excited as the boys did with this activity? The boys were so engaged and only some of the girls tried.”

Anytime I could make something a competition for the boys, they were all about participating. All I would have to do is mention the first one or group done would win, and most of the time the boys did not even care about winning a prize, they just wanted to be the “winners” of the day. However, if I planned an activity where the girls could be creative and kind of do their own thing, then I would receive more participation from them. The girls excelled at projects and for the most part would go above and beyond what was expected of them. The girls were always being complimented by the language arts teacher who had them after me. She would talk about how hard they worked and on task they were. Once I left the girls to work it became social hour.
March 3, 2011: “Why won’t the girls just work? Every time they are given work time, all they want to do is socialize. I only see five students really working on the assignment. Need to come up with a plan for this.”

In the student interviews I asked the students what I could do to help them out more in class. Most of the responses were what would be expected. Sam said that, “we needed to play more games.” Bob and Mary both thought that I needed to give more one-on-one help. Nothing that any of the students mentioned was new to me and for the most part I was already trying my best to do them in the classroom. So what I found out through the course of this study with my gender-specific classes is that the boys need more active/hands-on activities, where the girls do better with the creative, writing type activities. The one thing that I still need to work on is all the socializing in both classes.

Conclusion

My findings show that there was no real benefit to gender-specific classrooms in regards to math attitude, participation, and teaching methods. The only two parts of the data that showed there might be a possibility that gender-specific classrooms is a benefit is in the areas of a student’s attitude toward math and in the area of participation, especially the written portion. In order to maximize participation, there needs to create a competitive environment for the males (Smith, 1999) and an empathetic environment with open-ended tasks for the females (Wills, 2006). While there were parts in each area that showed success overall there were not enough data to support all of it. However, in conclusion I would have to say that I do not have the data to support my questions and research. Therefore, my data are inconclusive.
Implications

As a result of my study I have learned what types of activities work best for the different genders. When it comes to my teaching in the future I will be sure to try to incorporate these different tasks. As far as having more gender-specific classrooms, that will be up to my administration. The hard part about doing something like this is it creates scheduling difficulties for the office; when someone needs a schedule change it is very hard to do. However, if given the opportunity to do it again, I would. Even though the purpose of this study was not to look at academics, it was obvious by their grades that the gender-specific classes did much better in that area then my other two pre-algebra classes.
References


**Appendix A**

**Math Attitudes Survey**

Please be honest when filling out the survey.

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

<table>
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<th>2</th>
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<th>4</th>
<th>5</th>
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<tbody>
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<td>1) I like math.</td>
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<td>2) My parents think I am good at math.</td>
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<td>3) I am able to show the work required to solve math problems.</td>
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<td>4) I like to answer questions asked in math class.</td>
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<td>5) I feel comfortable asking questions in math if I don’t understand a concept.</td>
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<td>6) I am good at math.</td>
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<td>7) I do not feel comfortable participating in math class, even if I think I know the answer.</td>
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<td>8) I feel less anxious about participating in class because I am in a class of all boys/girls.</td>
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### Student Interview Questions 3/11/11

1. What do you like best about math?
2. What do you like least about math?
3. What could teachers do to help students with math?
4. Does being in a gender specific math classroom make you feel more comfortable to participate during class? Why or why not?
5. What do you like or dislike about being in a gender specific math classroom?

### Student Interview Questions 4/8/11

6. What were your thoughts about being put in a gender-specific classroom?
7. Now that you have been in a gender-specific classroom for awhile, what is your opinion of it? Why?
Appendix C

Participation Tally Sheets

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<thead>
<tr>
<th>Student</th>
<th>Answer Questions</th>
<th>Board Participation</th>
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### Appendix D

**Boys**

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Week 6: Gone Wed-Fri.

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*Note: The table data appears to be a student's weekly participation and progress report for math classes.*
Appendix E

Classbook Blank Spreadsheet Report

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Girls