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## **The single gender middle school classroom: A close-up look at gender differences in learning<sup>1</sup>**

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### **Abstract**

This is the case study of a middle school who implemented single-gender classrooms as a three-year experiment. The paper provides the synthesis of two years of data on teacher reports and student reports on how each group responded to strategies and curriculum in single-gender classrooms. One noteworthy finding from teacher reports is that girls' classes moved at a much faster rate and attained a higher overall class average than the boys. Girls found strength and leadership, another teacher reported and the single gender girls were easier to teach. Boys had a mixed review. To keep boys engaged, teachers found that they tended to call on boys more to respond to questions or to read a passage. On the positive side, teachers found that boys in single-gender classrooms reported they liked to do three quick activities rather than long involved project. Overall, teachers reported that boys and girls participated more and were less self-conscious about their work in single-gender classrooms. The paper provides a comprehensive set of strategies that worked and did not work as well as a middle school student survey for exploring this issue further.

### **The Changing Landscape in U.S. Education**

Single-gender schools were once commonplace in the United States. Title IX legislation of the Education Amendments of 1972 that prohibits sex discrimination in educational institutions receiving any federal funds padlocked the doors of most of these schools. In brief, Title IX states: *No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any educational program or activity receiving Federal financial assistance.*

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Title IX applies to any educational program in an institution that receives any federal funds (from elementary school through college.) Even private schools fit under this federal umbrella if they receive federal funding through financial aid programs. Institutions that violate Title IX mandates may lose their federal funding. At this writing, there does not appear to be any educational entity that lost federal funds by violating the tenets of Title IX.

Although, Title IX legislation closed the doors of many of these schools, legislation that is more recent brought life back to single-gender schools, making them possible entities once again. One area in which single-gender classrooms has gained high interest is in middle schools. No one disputes that middle level learning is a critical time when students are in transition. Middle-level educators know that students have needs distinctly different from elementary or high school students (Ecker, 2002; Tomlinson, Moon, & Callahan, 1998). It is a time when students are changing physically, emotionally and intellectually faster than at any other time in their lives. It is also a time when students need to experience success and increase their self-esteem. Yet, this growth needs to be structured with opportunities for choice and designed with an accountability plan. In this way, a school district's curriculum team can study what is working and what needs to be changed in order to foster effective learning (Ecker, 2002).

This time is also compounded by the reality that middle-level students face comprehensive standardized tests in the core academic areas of English/Language Arts (ELA), science, social studies, and mathematics. Funding issues associated with *No Child Left Behind* (NCLB) legislation (2002) drive the frenzy to score high on these tests. The legislation seeks to ensure that every child is taught by highly qualified teachers and holding school districts accountable through assessment measures. The ultimate intent for NCLB legislation is for schools to close the achievement gap, especially for students labeled as disadvantaged, ensuring that all students are successful in the core academic areas.

## Research Backdrop

Despite a rich body of educational investigation that shows males and females act and learn differently in social settings (e.g., Lueptow, 1984, Sadker & Sadker, 1988), teachers often fail to appreciate the important difference gender makes in learning, especially when students are in a mixed-gender classroom (Sadker, 2002; Zittleman & Sadker, 2003). Tomlinson (2001) found that because males and females learn differently, it is important to differentiate instruction. More males than females tend to prefer competitive learning, while females tend to prefer cooperative learning. The author, however, notes that it important not to generalize these learning differences to all males or females. Differences in gender have also been associated with various tendencies in how students take in information, process information, and communicate their ideas. Researchers have also observed differences in how the two genders tended to express their information. Females tend to express themselves verbally while males tend to express themselves through graphic representations (Schmuck, 1993).

Perceptions about gender differences have important implications for educational expectations by teachers, parents, and students themselves. Males traditionally have the expectation to achieve well in mathematics and physical sciences. Females are more likely to be expected to achieve in English and social sciences (Butler & Lee, 1998; Flood, Bates, & Potter, 2000). This trend, however, is changing and now girls are "catching up in math"

(Conlin, 2003). Brain research has also supported findings that an average male is already developmentally two years behind females in reading and writing when he enters the first days of school. By grade four, girls score higher nationally on reading tests than do males (Salomone, 2003).

What brought the issue of gender differences to the forefront was the feminist movement of the last decade (e.g., Gilligan, 1993; Pratchler, 1996; Schmuck, 1993). Feminists argued that both female and male students need equal access to high status knowledge such as science, mathematics, and technology. They also argued for the importance of presenting all students with a curriculum that offers models of excellence for males and females without any regard for their perceived abilities. This began an outgrowth, although limited, of single-gender classrooms (Blair & Sanford, 1999). The original purpose of single gender classes was to provide opportunities for students, principally those in middle school, to focus more on their academic learning rather than on social concerns, and to provide “safe and comfortable” places where females may gain skills and confidence in the areas of mathematics, science, and technology. The outcome of this movement has been a closer look at what is taking place in the classroom and specifically, in the academic learning of males and females (Salomone, 2003; Sanders, 2002).

## Exploring the Initiative

In a northeastern state in which this study took place, performance data for eighth graders in mixed classes from 1999-2002 showed that these students, at least those taking the state assessments, showed limited improvement in acquisition of knowledge standards prescribed by the Board of Regents. In the local school district, over 50% of middle school students scored below an acceptable score in each of the four academic areas of English/Language Arts, mathematics, science, and social studies.

The school district tried many academic interventions, one of which was the implementation of single-gender classrooms as a three-year experiment. The school district allowed parents to have the choice to place their child in single or mixed gender classrooms. Data collected during the first year were largely focused on student performance and, indeed, it was positive. Students in single-gender classrooms had improved attendance as compared to their attendance the previous year. In addition, the behavior referrals in single-gender classrooms decreased, most notably in the male classrooms. However, achievement data did not show a significant increase in achievement when eighth grade student state assessment scores in English Language Arts (ELA) and mathematics were compared to fourth-grade scores from four years previous. Report card grades, however, did show a modest improvement.

Data were also compared by single-gender achievement as compared to mixed-gender classrooms. Initially, single-gender classrooms were similar in comparison, suggesting that students learning arrangements do not necessarily make a profound difference in student academic achievement. The next question that arose was, “What was possibly making a difference, especially in students’ attendance and behavior?” The tentative hypothesis proposed: teacher behavior and student learning preference.

## What about the teachers

During the first year, teachers reported “stories” about how interesting it was to observe the differences in their all male and female classes. Sometimes, these stories were shared in staff development or department meetings. Teachers also shared their experiences when parents and administrators from other districts came to observe the single-gender classrooms. After the first year, teachers were asked about their insights, through a formal survey. This was followed up by interviews and classroom observations. The emerging picture provided a clearer understanding of how single-gender learning influences learning and teaching and vice versa.

## Capturing the Teachers' Voices

The qualitative study emerged from the need for teachers to share their insights. Questions were intended to be global so that teachers could express their insights and perceptions. In addition, the questions helped structure staff development for understanding gender differences based on research and effective teaching strategies. What were the perceptions of teachers on the success of the initiative? Would they want to be involved the following year? What worked in terms of strategies they discovered as they taught all-male classes and all-female classes? What would they like in terms of staff development if they wanted the single gender learning arrangement to continue?

Surveys were distributed to teachers in June 2003 and over 80% of the teachers (21 out of 28) involved in single gender classrooms responded. Teachers who did not respond to the survey were special education teachers in resource rooms, and some of the specialized programs (e.g., music, home economics, computer lab). In both cases, these classrooms maintained a mixed gender classroom format. The six-question survey form asked teachers to list the number of single gender and mixed-gender classrooms they had taught in 2002-2003; the source of information given to them to know about single-gender classrooms, and what they had learned about single-gender teaching and learning during the school year. In addition, the survey asked teachers what sources of knowledge they used during the school year, what information they would like to have to prepare them to become more prepared to teach in single-gender classrooms the following year, and if their opinion had changed about single gender classrooms during the year. The survey questions were initially developed by two university professors and further refined by the building principal and the superintendent. In order to triangulate the data, interviews were conducted from randomly selected teachers in the three middle school academies, students from mixed and single gender classrooms, and the building principal. The interview questions centered on three areas: teaching methodology, student assessment, and changes made in their teaching. Students' interviews were focused on how they perceived what they found different in their instruction, learning arrangements, and assessment as compared to the previous year.

## Critical Findings

The survey and interviews yielded a high degree of information. Teachers reported that they received two research articles at the beginning of the school year about single-gender classrooms from the Single Sex National Organization ([www.singlesexschools.org](http://www.singlesexschools.org)). One teacher reported, “We were just thrown into it with a little information and then it all just

took off.” During the school year, teachers found that they learned the most about effective strategies for single-gender classrooms from discussions with their colleagues and from insights gathered from parents or friends who had been in single-gender classrooms (e.g., parochial school). “I read and discussed the topic with folks who knew it way back then, when it was not that unusual.” A small percentage of teachers researched the education websites to gain more information, and some teachers shared their findings during faculty meetings.

One noteworthy finding from the survey is what teachers learned through their experiences in the classroom on what was effective for males vs. females. It was typical for teachers to report that girls’ classes moved at a much faster rate and attained a higher overall class average than the boys. Girls found strength and leadership; another teacher reported that the single gender girls were easier to teach. Boys had a mixed review. Few comments were made about the boys but two female teachers found that in the single gender boy classroom, there was “too much adolescence in one room at one time,” and that “boy classes tended to horseplay.” To keep boys engaged, teachers found that they tended to call on boys more to respond to questions or to read a passage. On the positive side, teachers found that boys in single-gender classrooms reported they liked to do three quick activities rather than long involved project. One male reported that he wanted to go back to mixed gender classes because he thought the girls were smarter and he would not have to give the teachers as many answers as he did in his all boy classroom. Overall, teachers reported that boys and girls participated more and were less self-conscious about their work. Teachers also reported that boys and girls’ emotional reactions to success and failure were also different. Boys enjoyed taking tests and girls enjoyed projects and writing stories. Both all-boy and all-girl classes enjoyed hands-on activities.

### **Up-Close and Personal**

The delight of watching single-gender classrooms is that observations about gender differences are almost immediate. This has been evidenced during the second year of the study and obvious to an observer who spent time watching the same lesson in both an all male class and an all female class. The lesson was on writing a structured book report on a biography that the students had read the previous week. The activity took place in the middle school library. All boys in the males’ class wrote a report about a male figure, e.g., a baseball or football player (for the most part). Girls, on the other hand, selected females as their topic in about 75% of the cases. These were typically female vocalists (e.g., Mirah Carey) or the tennis sisters (Serena and Venus Williams). The boys chosen were wrestlers or racecar drivers. The girls talked about their choices with others at their table and quickly completed their worksheet. The boys also completed their worksheet but needed more prodding and coaching from the four adults in the room. In addition, the boys responded more to motivation techniques like “I bet you a dollar you can’t finish this by the bell” that some of the adults used to encourage them to complete their work.

Another way to look at differences is to compare learning tasks of students in a single gender classroom to a mixed gender classroom. The mixed gender classroom was evenly balanced between the boys and girls. The lesson was on constructing a mobile and using the levels of the mobile to describe the personal attributes of each student. In the mixed gender classroom, the boys and girls did not talk with each other and completed the task quickly.

There was adequate time at the end of the period for the students to share their mobiles with each other, but both the boys and girls gave a quick summary. In each of the single gender classrooms, both the girls and the boys spent more time constructing their mobiles and talking with their peers about their choices of words to use for the mobile. Because the lesson took longer than a class period, the class discussion took place the next day. The teacher reported, however, that when the students were asked to take their mobiles home, the boys wore theirs as “hats” as they walked out of the classroom. The girls, on the other hand, carefully wrapped theirs in paper so they would not get tangled. The teacher concluded that boys, typically, were not as enthused about showing their “projects” to others as were the girls.

Sometimes, the most direct way to learn about differences is to ask the students. In the second year, an Associated Press reporter visited the school, talked with teachers, administrators, and students and wrote a press story about the single gender classrooms in the district. The article spurred an interest in the state and many small newspapers carried the story. One of the teachers brought the story from a small newspaper in the area and read it to his all-girl class. He then asked them about their feelings about being in an all girl class. The girls who responded were all pleased to be in this learning arrangement. Their comments indicated that they felt comfortable answering questions, not being afraid to make a mistake when they answered a question, being able to work together, and not having to compete with the boys. One girl admitted that it was also boring because there were no boys to talk to or as the teacher interpreted “to flirt with.”

Another observation worth mentioning is in watching teachers change their teaching strategies to meet the learning needs of boys and girls. A teacher found that she tends to teach faster and “shorter bursts of information” to males to hold their attention. In contrast, she tends to allow girls to talk and even socialize to get their answers better developed. Teachers also report that they tend to use less structure with girls and more with boys. Their awareness of gender differences influences how teachers structure their assignments. Teachers find that they repeat their deadlines for long-term assignments to the boys and provide more in class time for them to begin and work on long-term assignments. They tend to encourage girls to add creativity to their long-term assignments and do not spend as much class time on these assignments. Ironically, teachers find that their male classes are at least two to three classes behind their girls after a week on a thematic unit.

Teachers found that even though they gained a wealth of information through teaching in single and mixed gender classrooms, they wanted additional information. The overwhelming request was for research studies on the topic, more information on curriculum and instruction, and gender specific teaching strategies. Despite the limited information, teachers made adjustments in their teaching strategies by the end of the fall semester. They framed their classrooms to enable girls to work more effectively in small cooperative groups while boys enjoyed a horseshoe desk arrangement where they could answer quickly and move into hands-on activities. Girls tended to enjoy the project-based assignments while boys tended to enjoy more competitive learning games and charts to show their progress.

Teachers in mixed gender classrooms also observed that students tended to pair off by genders if given the opportunity to select partners. The physical education teacher reported that on a few occasions when the boys and girls were separated for different activities, the boys and girls both participated more when they were in single sex arrangements.

## Quick Tips for Gender Differentiation

No set of teaching strategies for teaching males or females is fool proof. Admittedly, student learns differently based on more than their gender. Some researchers' findings about differences in male and female learning styles are more subtle. For example, Feingold (1994) observed that girls tend to set a higher standard in their classroom performance. Consequently, they self-evaluate their performance more critically. Ironically, with high standards, girls tend to have lower self-esteems as they tend to be excessively critical in evaluating their own academic performance (Pomerantz, Alterman, & Saxon, 2002). Males, on the other hand, tend to have unrealistic estimates of their academic performance. The goal of the teacher is to help students look more critically at personal learning goals and to evaluate themselves realistically. The following learning tips are interesting characteristics seen more clearly in single-gender classrooms. These tips may serve as a data baseline when setting up a staff development program in single-gender teaching (Ferrara & Ferrara, 2005).

### Single-Gender Learning Tips

Females	Males
Comfortable with cooperative learning arrangements; two females presenting to a small group is even more effective	Enjoys competition and challenges. As one writer explains, "Keep the classroom LOUD as compared with the girls' classroom and MOVING" (Taylor, 2002).
Enjoy assignments that are open-ended	Enjoys assignments that are "quick paced" and are completed quickly
Tend to report more verbally and engage more in classroom discussions	Tend to want to reach conclusions quickly and have more short-term discussions
Tend to add the arts (e.g., music, drama, and dance) to express feelings and concepts	Tend to use analogies based on sports or action figures to express concepts and less able to express feelings
Tend to express self more through fiction and poetry	Tend to express self more through non-fiction
Tend to enjoy role playing and skit development in order to summarize a concept or prior learning	Tend to enjoy activities that are objective and fact-oriented in order to summarize a concept or prior learning (e.g., poster, model construction)
Tend to express activities that were done with parents and with friends	Tend to provide limited details about activities, and largely limited to activities with friends
Prefer assignments that involve reading	Prefer assignments that involve math or science
Prefer research and web searches	Prefer computer challenging games (action games)
Prefer independent projects	Prefer short reports
More comfortable with test formats that have short answers, extended prose, or verbal reasoning	More comfortable with test formats that have multiple choice and true and false

### Single-Gender Learning Tips (Cont.)

Females	Males
More comfortable with test formats that have short answers, extended prose, or verbal reasoning	More comfortable with test formats that have multiple choice and true and false
Tend to identify an academic failure as more than a failure of a subject; may generalize a failure of self and disappointment to others	Tend to identify an academic failure as a failure of a subject
Enjoys learning about the background of a concept or a skill before the concept or skill is taught	Tends not to be interested in the “story” behind the new concept or skill to be taught; tends to be more “just the facts” type of learner
Enjoys informal learning arrangements, e.g., first names, soft chairs and pillows	Works more effectively and with less discipline issues in formal classrooms formal, e.g., “Mr.”,
Provides more text when asked to write a journal entry that begins, “I feel...”	Provides more text when asked to write a journal entry that begins, “I would like to be a ...”
Tends to do better solving math word problems when they are embedded in a story	Tends to do better solving math word problems when they can be solved using spatial strategies

The body of research on teaching strategies continues to evolve as teachers look at new ways of teaching (see [www.singlesexschools.org/differences.html](http://www.singlesexschools.org/differences.html) for recent research on this topic.) Teachers in single-gender classrooms provide wonderful insights into what is working and what needs to be changed. The newest challenge is to take what has been learned in single-gender classrooms and now bring these lessons of differentiated instruction into mixed-gender classrooms.

### Moving Forward To New Issues

Teachers consistently reported that it would take more than one year to observe the benefits and drawbacks of the single gender classroom in depth. When asked if they would want to teach the following year in a single gender classroom, 19 or the 21 teachers reported they would like to return to the single gender classroom. One teacher remarked, “The differences are remarkable. Girls became more assertive socially. Boys are less affected by what is said in the classroom.” Another teacher gained a unique insight when she wrote, “I realized that sixth grade boys need ‘buffers’ for their exuberance. I found out that in the mixed-gender classroom, it tended to be the sixth grade girls.”

An area that is largely unexplored is specific instructional strategies or teaching models. One intent is for the research team to observe students’ learning in single and mixed gender classrooms to see the types of interactions, levels of questions, and learning materials. Based on the data, the team and teachers will explore alternatives. Teachers also will be provided with more material on brain-based research on males and females, differentiated instructional techniques, and specific articles on how boys as well as on how girls learn. It is



imperative that practitioners engaged in teaching in single-gender as well as mixed-gender classes study their practice and continue to help students in all environments learn socially as well as academically.

Another outcome of the study is to start to provide teacher candidates with an awareness of gender differences in learning as part of the teacher preparation program. Once the study began, professors in the elementary and secondary preparation programs explored how much the issue of gender differences is covered in textbooks on teaching practices, both in general pedagogy and in content specific pedagogy. The results are surprising: little attention is paid to gender differences in learning preferences across the board. Some mention is made in general pedagogy texts or in content pedagogy in science or math but little if any is made in content pedagogy in literacy or in social studies. This has spurred a new interest in how teachers and students in single gender classrooms perceive learning preferences in subject specific content. The future direction of this research is to explore this issue more closely through surveys and interviews with teachers and students (see appendix A for a sample survey). Until now, the focus on gender differences has been concentrated on what is taking place in science and mathematics classrooms. The lens now is shifting to other areas and the future holds promise that we, as educators, will also hear the voices of our middle school learners in their social studies and English/Language Arts classrooms.

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## Appendix A

Survey Research Questions for Discussion with paper (Sample)

### Section I Demographic Information (Circle the choices below that best describe you)

1. You are a **Male** **Female**
2. You are in **6<sup>th</sup>** **7<sup>th</sup>** **8<sup>th</sup>** grade
3. You are in a **Mixed-gender** **Single gender** classroom.

### Section II Classroom information about your **Social Studies** Class

In your **Social Studies** classroom:

4. Your teacher is **Male** **Female**
5. You occasionally ask question while your teacher is teaching.  
**Yes** **No**
6. You occasionally ask question to your teacher after finishing class.  
**Yes** **No**
7. You usually ask questions about social studies to your friend.  
**Yes** **No**
8. You like working in group.  
**Yes** **No**
9. When working in a group, you like to give your opinion.  
**Yes** **No**
10. The teacher assigns the class presentations.  
**Yes** **No**
11. You like giving a presentation.  
**Yes** **No**
12. The teacher assigns class projects.  
**Yes** **No**
13. You like to do class projects.  
**Yes** **No**
14. You like to do worksheets.  
**Yes** **No**

### Section III Classroom information about your **English/Language Arts** Class

In your **English/Language Arts** classroom:

15. Your teacher is **Male** **Female**
16. You occasionally ask question while your teacher is teaching.  
**Yes** **No**
17. You occasionally ask question to your teacher after finishing class.  
**Yes** **No**
18. You usually ask questions about social studies to your friend.  
**Yes** **No**
19. You like working in group.  
**Yes** **No**
20. When working in a group, you like to give your opinion.  
**Yes** **No**

21. The teacher assigns the class presentations.

**Yes**

**No**

22. You like giving a presentation.

**Yes**

**No**

23. The teacher assigns class projects.

**Yes**

**No**

24. You like to do class projects.

**Yes**

**No**

25. You like to do worksheets.

**Yes**

**No**

#### **Section IV**

26. You prefer to be placed in **Mixed-gender** **Single gender** classroom.

27. Give one reason why you prefer to be placed in that type of classroom

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