

Edina Public Schools

Single-Gender 9th Grade American Government Class

Report to the Edina Public Schools Board of Education

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Executive Summary

The affect of gender differences on student achievement has been studied by the school district (2002, Edina Public Schools)¹ and has been cited in other scholarly research projects. The gender differences study conducted by the Edina Public Schools reveals that both boys and girls, over time, may not fully benefit from the current educational system and its instructional delivery. In particular, boys lag behind girls in academic achievement and social well being. Findings from this research, mirroring findings at the state, national and international level, drew much attention in the educational community in Edina², in the State of Minnesota³, and in the nation as well.

There are inherent challenges for educators to adapt to gender differences and to improve learning for both boys and girls. In response to these challenges, two South View Middle School ninth-grade grade Social Studies teachers piloted a single-gender education experience for students in an attempt to study the effects of the learning environment and instructional strategies on student achievement for both boys and girls.

This study reports the results found from this pilot project of the South View Middle School single-gender classes in American Government during May of 2003. This study makes some preliminary observations based on student academic work (tests and quizzes), pre- and post-surveys of student opinions, and teachers' perspectives and experiences gathered in ninth-grade American Government classes. The data provide useful insights into not only student academic achievement, but also into student attitudes towards their single-gender learning environment experience in comparison to their previous mixed-gender educational experience in American Government.

The results of the data and subsequent discussions among the teachers involved suggest that no evidence is found that single-gender education works better than mixed-gender education in terms of academic performance. When elements of equitable education are present, such as equitable class size, teaching practices, academic curriculum, and collaboration on the part of the teachers, both boys and girls have an equitable opportunity to succeed. Both boys and girls thrive in an environment in which effective instruction takes place, regardless of whether the grouping of students is single-gender or mixed-gender.

Student opinion survey data suggest that girls perceived the single-gender class more positively than boys. In the all-female class, students helped each other and enjoyed the class more. Furthermore, girls noticed that student discipline and instructional sequencing were well maintained in class. In spite of these positive findings for single-gender classes, both boys and girls report that they like mixed-gender classes better. Reasons cited included the opportunity to be exposed to a variety of opinions and perspectives, especially in relation to the topics covered in American Government, many of which require critical and divergent thinking skills.

The experiences of the teachers in the study show that both boys and girls participated in tasks and discussion at a high level in single-gender classes. The use of the single-gender

class may have contributed to the boys being more focused on tasks assigned by the teacher, and the girls being more inclined to participate actively in classroom discussion. Both boys and girls in the single-gender classes indicated their ability improved in focusing more on academics and less on trying to impress the opposite sex.

This pilot study not only provides perspectives and observations about single-gender education, but also offers valuable insights into educational practices for all students. Using the results of this study and of other research, educators need to expand the research base through further studies and to share significant findings with fellow educators in order to improve learning for boys and girls in the United States.

Introduction

There is a growing recognition of gender differences in learning styles. The gender differences study conducted by the Edina Public Schools in 2002 reveals boys and girls learn differently and that all students, over time, may not fully benefit from the current educational system and its instructional delivery. The findings from this study suggest that boys lag behind girls in both academic achievement and social well being. Findings from this research, mirroring findings at the state, national and international level, drew much attention in the educational community in Edina, in the State of Minnesota², and in the nation as well.

Issues of gender equity point to the effect of teaching approaches for boys and girls, yet broader issues also are brought into play. Smaller classes and caring teachers may make a bigger difference, but it is also important to tailor instructional strategies to meet the needs of boys and girls. With the requirement of reducing achievement gaps embedded into the No Child Left Behind Act, it is vital to provide equal opportunity to both boys and girls and reduce achievement gaps between genders. It is a new challenge to educators today to adapt appropriate teaching and learning strategies to improve learning for both boys and girls.

As a continuation of the district gender research, educators at South View Middle School explored the single-gender educational practice by piloting two single-gender classes in social studies, American Government at Grade 9, in May and June, 2003. This project attempts to examine the differences between the mixed-gender classes and the single-gender classes in terms of student learning outcomes as well as perspectives and experiences from both students and teachers.

Using the experience of the single-gender classes, this study attempts to address the following questions:

1. Do boys and girls feel more comfortable and learn better in a single-gender classroom? Is the single-gender class a good way to improve learning for both boys and girls?
2. Are social dynamics different in mixed-gender and single-gender classrooms? What are the differences between mixed-gender and single-gender classes in terms of student learning styles and teaching strategies?
3. How can we characterize the nature of the changes in student achievement and perspectives in both mixed-gender and single-gender classrooms?

Research Design

Two classes of 9th grade American government were selected for single-gender classes. In these classes are 24 males and 18 females. These classes are scheduled for the first block of time during the school day, with the period lasting 89 minutes and with students meeting every other day. Curriculum units included a wrap up of the judicial branch, bill of rights and a review for the final exam. Students in the two classes are comparable in their academic proficiency and demographic backgrounds. Also, students in the two classes are comparable with other social studies classes that didn't change into single-gender classes in terms of their academic proficiency and demographic backgrounds.

Two teachers, one female and one male, who had taught the mixed-gender classes before reorganization, taught the reorganized single-gender classes. The female teacher taught the girls

and the male teacher taught the boys. In an attempt to eliminate teacher behavior as a variable, the teacher's goal was to treat the gender pure classes the same as the coed classes. The curriculum, activities and behavior management policies were to be as similar as possible. Also, these two teachers worked together collaboratively, preparing their lessons with each other and teaching in a similar style.

Data Collection and Scoring Scale

This study used three sources of data. First, a focus group, one all-male class and one all-female class with 42 combined students as mentioned above, was selected. Student test scores from two quizzes and two tests before and after experiencing the single-gender classes respectively, were collected. Because the quizzes and examinations have different questions, a calculation of the number correct or the percent correct would not be valid scales for comparison. Therefore, all scoring data were standardized to have a mean of 0 and a standard deviation of 1 for each test

using the same procedures as the formula: $\frac{X_i - \bar{X}}{\sigma}$. Because this standard scale is hard to explain, it was transferred into a mean of 50 and a standard deviation of 7.5 for each test, as the formula, $X_i \times 7.5 + 50$.

In order to compare the differences between mixed-gender classes and single-gender classes, a control group with 52 students who stayed in the mixed-gender classes was also selected randomly.

Second, survey data collected from before and after the single-gender classes were collected from the focus group on the first day and the last day of the single-gender classes. The survey examines their satisfaction, involvement, relationship with other students, perspectives of their teachers in the mixed-gender classes as well as their preference in either coed or single-gender classes. A likert scale from 1 representing "not at all" to 5 representing "very much" was used in this survey.

Finally, teachers were surveyed regarding their perspectives and experiences in both mixed-gender and single-gender educational environment.

The T-test one sample paired comparison method was conducted to analyze academic and survey data to see if there was any statistically significant differences between pre- and post- tests and surveys.

Test Score Comparison

The pre- and post-test scores in this study examine how students master different units of knowledge in their learning. The reason for comparison between pre- and post-test scores is to examine how students master the content in different sessions. Because the different units of knowledge do not have differences in difficulty level, we did not expect better scores in the post-tests.

Table 1 presents student pre- and post-testing results, including the focus group and the control group. The results show that student pre- and post-scores from the single-gender classes are nearly identical with a .008 point of difference, while results from the control group show that pre-test results are slightly better than those of the post-tests. Figure 1 also shows the results. In general, no significant differences exist between student pre- and post-scores in both mixed-

gender class and single-gender classes. Figure 2 confirms this finding by showing the means of the pre- and post-test scores and 95% confidence interval of the means for the focus and control groups. In addition, Table 1 shows that scores of male students rose in post-tests while scores of female students dropped in the posttests for both control and focus groups. However, in the single-gender classroom, girls scores did not drop as much as girls scores in the control group, while boys in single-gender classroom did not rise as much as boys in control group either.

Table 1
Testing Scores Comparison between the Single-Gender Group and Co-Ed Group

	N=	Average Standard Score		Absolute Difference	Std. Error Mean
		Pre	Post		
Single-Gender Group (Focus)	87	49.996	50.004	.008	.847
Co-ed Group (Control)	94	49.637	49.406	.230	.903
Single-Gender Group Female	32	50.842	49.793	1.049	1.208
Single-Gender Group Male	55	49.504	50.127	.623	1.142
Co-ed Group Female	46	48.133	46.862	1.271	.942
Co-ed Group Male	48	51.078	51.845	.767	1.516

Figure 1
Comparison between Focus Group and Control Group with 95% Confidence Intervals

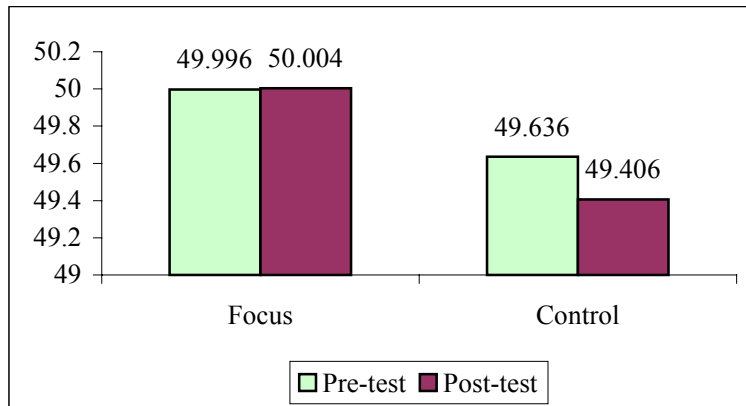
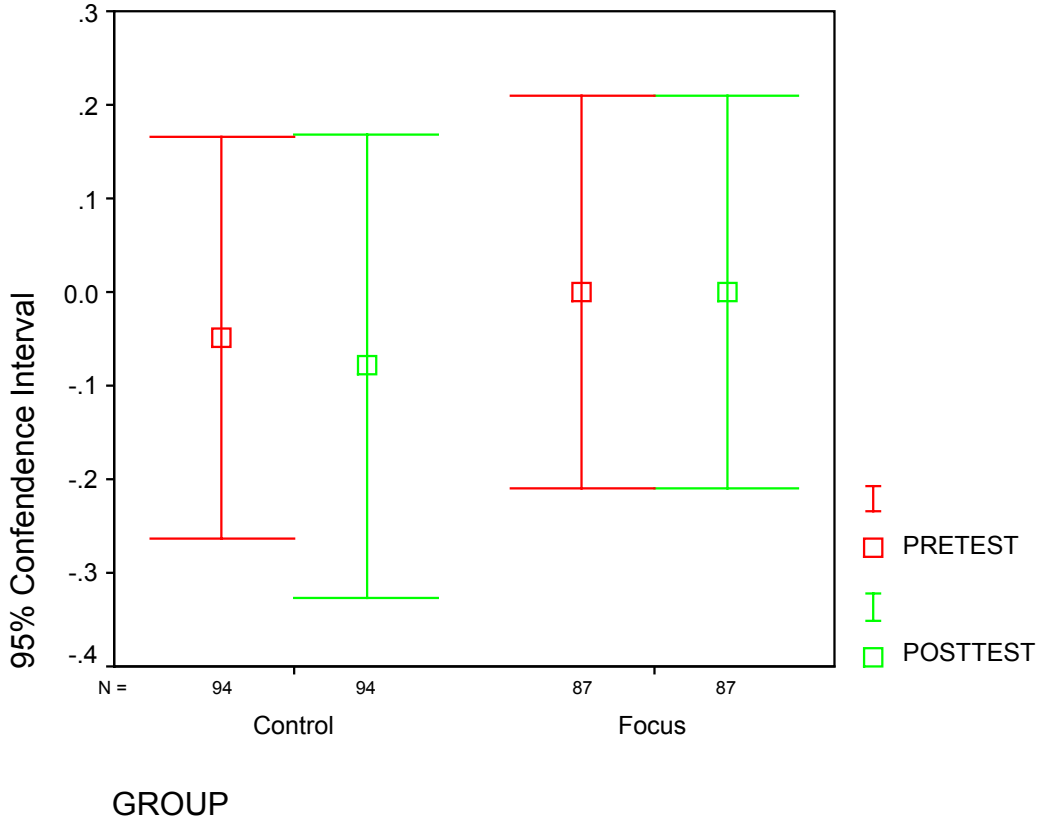


Figure 2.
Focus and Control Group Comparison in Test Results



Survey Results Comparison

Fifteen questions, each measuring student perspectives about their learning environment, were created for this survey. As mentioned above, these same questions were used in surveys both before and after the single-gender classes started. Table 2 includes the results from 13 of the questions with the same rating scale from all students, females and males, in pre- and post-surveys in terms of their learning environment.

As Table 2 shows, students are generally more positive towards single-gender classes as indicated by their post-survey responses. In particular, students respond to the question, “I enjoy being in social studies class” with significantly more positive results in the post-survey than the pre-survey. Table 3 shows that females are more positive toward the single-gender classes for all survey questions. Significantly more female students report that more students help each other in class and that discipline and class order are appropriately maintained in class in the all-female class. Male students, however, have less positive attitudes towards the single-gender classes than their female counterparts.

It is interesting to note the results of Figure 6 showing that the percentage of girls who like mixed-gender class decreased while the percentage of boys who like mixed-gender class increased after they went through the experience of the single-gender class pilot project.

All pilot study students were given the opportunity to submit comments about the pilot project as part of their surveys. Both boys and girls reported one main reason that they preferred mixed gender classes for American government is the diversity of perspective offered in these classes. Some girls offered that perhaps other subjects such as mathematics, sciences and world languages would be better suited to single-gender classes in that they would not require the same need for diversity of opinions that a social studies class requires. In addition to that, some boys reported that “girls study better than boys” and that they missed the opportunity for girls to help them with their studies. Other ninth-grade boys in the single-gender pilot group stated simply that they preferred mixed-gender classes because “girls are easier on the eyes!”

Table 2
Perspectives Comparison of Survey Results Before and After the Single-Gender Class
All Students
N=42

Questions	Pre-Survey		Post-Survey		Diff.
	Mean	Std Error	Mean	Std Error	
I am satisfied with my social studies class.	4.07	.154	4.23	.113	.23
I enjoy being in social studies class.	3.57	.174	4.00	.116	.43*
Students in my class are fun to study with.	4.02	.15	4.23	.149	.21
Students in my class actively participate in all kinds of class activities.	3.79	.154	4.03	.140	.24
I am interested in participating in all class activities.	3.45	.157	3.74	.150	.29
I like to ask questions when I have them in review session.	3.57	.174	3.51	.142	-.06
Students in my class help each other.	3.60	.156	3.82	.146	.22
Students in my class respect each other.	3.95	.144	4.97	1.04	1.02
Students like to share their opinions in open discussion.	4.17	.144	4.21	.117	.04
All students have equal opportunity to participate in all activities in class.	4.52	.133	4.31	.128	-.19
Teachers hold high expectations for all students.	4.12	.137	4.23	.135	.11
Discipline and class order are appropriately maintained in class.	3.98	.147	4.03	.170	.05
I feel stressed in class.	2.60	.187	2.51	.160	-.09

* = Pre- and post-responses differ statistically at .05 level.

Table 3
Perspectives Comparison in the Pre- and Post-Surveys from Female Students
N=17

Questions	Pre-Survey		Post-Survey		Diff.
	Mean	Std Error	Mean	Std Error	Diff.
I am satisfied with my social studies class.	4.00	.192	4.38	.155	.38
I enjoy being in social studies class.	3.65	.256	4.25	.144	.60*
Students in my class are fun to study with.	4.18	.300	4.56	.128	.38
Students in my class actively participate in all kinds of class activities.	3.76	.315	3.88	.239	.12
I am interested in participating in all class activities.	3.41	.272	4.06	.193	.65
I like to ask questions when I have them in review session.	3.29	.281	3.75	.171	.46
Students in my class help each other.	3.65	.284	4.38	.125	.73*
Students in my class respect each other.	3.94	.250	7.06	2.467	3.12
Students like to share their opinions in open discussion.	4.13	.287	4.13	.287	.00
All students have equal opportunity to participate in all activities in class.	4.53	.244	4.56	.157	.03
Teachers hold high expectations for all students.	4.24	.161	4.50	.129	.26
Discipline and class order are appropriately maintained in class.	4.06	.264	4.69	.120	.63*
I feel stressed in class.	2.35	.270	2.44	.302	.09

* = Pre- and post-responses differ statistically at .05 level.

Table 4
Perspectives Comparison in the Pre- and Post-Surveys from Male Students
N=25

Questions	Pre-Survey		Pre-Survey		Diff.
	Mean	Std Error	Mean	Std Error	Diff.
I am satisfied with my social studies class.	4.12	.226	4.13	.158	.01
I enjoy being in social studies class.	3.52	.239	3.83	.162	.31
Students in my class are fun to study with.	3.92	.152	4.00	.227	.08
Students in my class actively participate in all kinds of class activities.	3.80	.153	4.13	.170	.33
I am interested in participating in all class activities.	3.48	.193	3.52	.207	.04
I like to ask questions when I have them in review session.	3.76	.218	3.35	.205	-.41
Students in my class help each other.	3.56	.183	3.43	.197	-.13
Students in my class respect each other.	3.96	.178	3.52	.217	.44
Students like to share their opinions in open discussion.	4.20	.153	4.026	.144	.06
All students have equal opportunity to participate in all activities in class.	4.52	.154	4.13	.181	-.39
Teachers hold high expectations for all students.	4.04	.204	4.04	.204	.00
Discipline and class order are appropriately maintained in class.	3.92	.172	3.57	.234	-.35
I feel stressed in class.	2.76	.254	2.57	.176	-.19

Figure 3.
Students Reporting They Are Enjoying Being in Social Studies Class

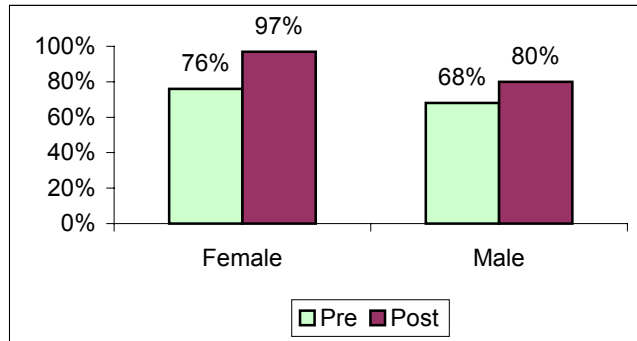


Figure 4.
Students Reporting Students in Class Help Each Other

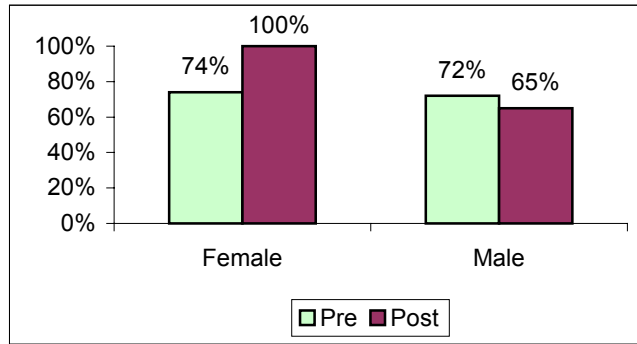


Figure 5.
Students Reporting Discipline and Class Order Are Appropriately Maintained in Class

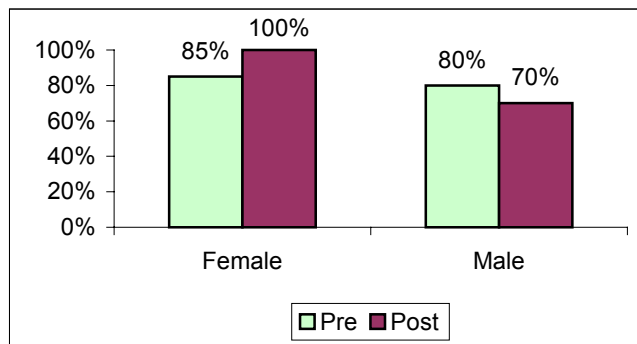
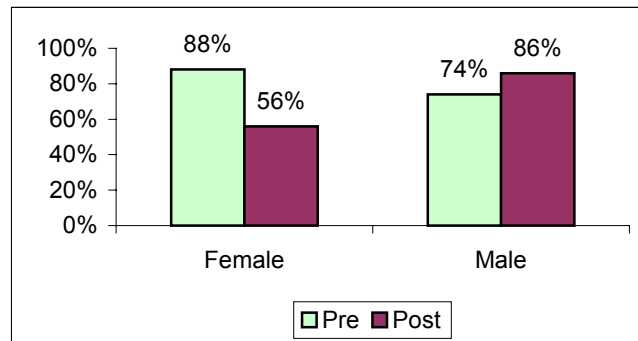


Figure 6.
Students Reporting They Like to Stay in Mixed-gender Class



Teachers' Perspectives, Experiences and Strategies

Preconceptions

Before the single-gender class started, the male teacher first theorized that the boys would cause more classroom management concerns than if they were with girls, believing that the absence of girls would lead to a “boys will be boys” group mentality taking over the class. He also envisioned classroom management concerns lessening as the single-sex course progressed, and that removing girls would eventually result in the boys actually being less distracted and feeling more included to focus on the content of the class and less encouraged to be the center of attention for female classmates.

The female teacher believed the girls would be more open to participation and more relaxed in a single-gender class and that there would be very few classroom management issues. She, like most educators in American schools, found that classroom management concerns focus primarily on boys, and that the absence of boys would contribute to significantly fewer student discipline and classroom management concerns. She believed that the girls in a single-gender class would be more open to participation, more relaxed, and more able to achieve academically at a high level.

Reflections from the Pilot Study

In reflecting on the results of this study, both the male and female teacher found parts of their predictions about student behavior to be accurate, while other anticipated outcomes did not occur. The male teacher noted that students in the all-boy class began right away to participate eagerly, even aggressively, in classroom discussions. This aggressive behavior was disruptive in certain cases such as when students shouted out answers or opinions at inappropriate times.

In the single-gender classroom, the male teacher noted discussions were easily generated and opinions were shared openly among the boys. The topic one particular day was free speech and more specifically flag burning. One very aggressive boy raised his hand and explained his

opinion in the context of “love it or leave it!” Many boys agreed by nodding their heads or saying “yeah.” One boy then raised his hand and gave his opinion that if you really love your country you will do something to make it better, not leave it. Both in this particular interaction and in a number of other discussions in the all-male class, the boys were able to challenge each other in the class, yet be able to maintain a level of acceptance of these opinions.

Both with managing student discussion and with student discipline in general, the male teacher discovered that he did not have to be as strict as he had predicted with the all-male class. He also discovered that he was able to use similar teaching and classroom management practices with all of his classes regardless of their gender composition. For disruptions the teacher intervened by having short, private conversations with students in the hallway outside the classroom.

Conversely, on at least two occasions during the pilot study the teacher recalls visually scanning the entire room and noticing that every student in the all-boy class was on task, something that rarely if ever occurred in a coed class. The teacher speculated that both the early morning time for this all-male class (7:45 – 9:14 Am.) and the all-boy make up of the class may have contributed to this phenomenon occurring. In any case, the group or mob mentality did not really take off and a variety of opinions still existed and were shared in the all boys’ class.

The female teacher indicated that at the beginning of her all-female class the girls were “really quiet” and that for her as a teacher the class appeared to be “teetering on boredom.” The female teacher indicated that she had to add activities to the all-girl class on various occasions because the girls finished the discussions more quickly, choosing to contribute shorter and less complex answers than in a coed class. The girls also were less willing to offer comments that contradicted those of other girls. The teacher also speculated that the cooperative nature of the girls led them to refrain from challenging the views of their classmates.

The female teacher also indicated her surprise at having to “look around for participation,” especially in light of the girls’ new freedom from boys. For example, as in the boys’ class, the “love it or leave” majority opinion was also apparent in the free speech class discussion. Yet in the all-girl class there were fewer offerings of dissenting opinion than there were in the all-boy class or in co-ed classes that the teacher has taught in the past.

The girls quickly moved beyond this initial reticence, however, with the teacher noting that by the end of the quarter “discussions were really flowing.” She indicated a “give and take” of information among students creating an atmosphere of respect for each other that was not present in a mixed gender environment. The teacher indicated her pleasure in teaching this class in that students’ comments appeared to focus on the merits of the topic and not on trying to impress either the teacher or one’s classmates.

In post-Pilot Study class discussions with the students, both boys and girls stated that they liked mixed-gender classes better. Many of the boys’ comments focused on the social nature of being with girls, citing variations of the already stated “easy on the eyes” syndrome. Girls on the other hand focused on the value of having boys in class to give “different perspectives” to discussion of controversial topics. Boys were not totally unaware of the academic results of single-gender classes, however, citing as an area of concern the fact that girls, whom they perceive to be “smarter,” were not present in their classes to “give us help when we needed it.”

Both teachers agreed with the value of having diversity of opinion present in a social studies class, especially one like American government in which students are challenged to state and defend their opinions. The success of a course such as this depends on the ability of students to understand the perspectives of people of different gender, race, religion and cultural heritage.

Discussion, Conclusions and Recommendations

Single-gender education, not so long ago thought to be irrelevant as a research topic, is being revisited as an option for reforming public education in an environment of accountability. While no stable and enduring model has yet to be found, the public debate in Australia and England over the relative advantages and disadvantages of mixed-gender and single-gender schooling shows no signs of abating.

The important research questions are: Is a mixed-gender classroom always the best for boys and girls? Which teaching and learning practice, mixed-gender or single-gender education, has the best potential for improving student learning? This study attempts to find evidence to support one of the styles so that schools can provide better learning environment for our students.

Results from student tests in this study suggest that the single-gender classroom and the mixed-gender classroom produce very similar academic performance for both girls and boys in social studies attainment, after controlling for student and school backgrounds. It is possible that the length of the project is too short (four weeks) to find dramatic changes in student achievement.

The survey results also suggest that in general girls responded more positively than boys towards single-gender classes and that more girls than boys liked the single-gender classes after they went through the experience. Based on their experiences in single-gender classes, more girls than boys stated that they enjoyed their classes and felt that students helped each other. Additionally, girls felt that the class was managed well and that discipline problems were not a factor. On the other hand, some boys perceived girls as being smarter and regretted not having them in the class to help them with their studies. Other boys stated in straightforward terms that the attractiveness of girls was something they missed in the all-boy class. We speculate that comments such as this reflect both the earlier physical maturation of girls by the age of 15, and the relatively stereotypical interpretation of femininity on the part of boys.

The teachers in this study helped provide valuable insights based on their experience. They found that the single-male class was not as difficult as expected from a classroom management perspective. Male students participated in class discussion and tasks fully and the all-female class also met the expectations very well: the classroom was quiet, more girls participated in discussion, tasks were done on schedule, and materials were distributed more quickly. In the single-gender classes, students no longer appeared to be concerned with trying to impress the opposite sex. The girls appeared to be learning to be more academically competitive and boys were learning to collaborate. However, it appears that students in single-gender classes in social studies may be missing an opportunity to experience diverse opinions and multiple perspectives that are generally regarded to be a vital part of social studies education.

The analysis of data and subsequent discussion suggest that it is too early to judge the success or failure of the single-gender classroom experience. Single-gender classes may provide students with some experience that they may not be able to obtain from the mixed-gender class and for them this type of instructional setting may be appropriate. The single gender class, however, may not be suitable for all subjects or age levels. It is possible that other subjects which require less discussion and less emphasis on diverse opinions may show more positive results in terms of student achievement and in teacher and student satisfaction.

Finally, in order to be sure that a single-gender class is an appropriate instructional intervention to either offer as an option or to require for students, schools and teachers should consider the following recommendations:

1. Offer a single-sex class based on students' voluntary choice and the voluntary choice by the teacher in order to create a positive atmosphere for learning.
2. Offer single-sex classes for students at different ages and in different subjects over a longer period of time so that one can see the results more clearly.
3. Encourage all teachers to gather data about the results of instruction in their mixed-gender classes, analyzing the data by gender as a way of noting any differences that are occurring. Encourage teachers to develop intervention strategies based on the results of their research.
4. Consider replicating the design of this study, and changing the gender of the teacher, with the female teacher teaching the boys and the male teacher teaching the girls as a way of learning more about the interaction effects between the gender of the students and the gender of the teacher.

We hope that this Pilot Study of single-gender social studies classes in South View Middle School will provide useful teaching and learning strategies which may have a positive impact on student learning. In addition, we hope this study encourages the development of educational practice and instructional strategies that will better ensure success for all students, both boys and girls, in Edina and the United States.

Notes:

- ¹ Dragseth, K., Weymouth, C. & Du, Y., 2002. *Gender Difference and Student Learning*. Gender Task Force Research Committee, Edina Public Schools: Minnesota.
- ² Waldon, L. 2002. Edina School District Releases Results of Gender Study. *Edina Sun Current*, May 8 2002.
- ³ Kersten, K. 2002. Now it's girls who have advantage in school. *Star Tribune*, May 22, 2002.

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