Gender Differences in the Workshop Setting

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Abstract:

We investigated how the gender composition of workshop groups affects its members’ participation, perceived understanding of the workshop material, and overall enjoyment of the workshop. To investigate the role of gender compositions, we split our workshop into same sex groups during one week of workshop and mixed sex groups during the second week of workshop; after each condition the students were given self report surveys. In men, there was no noticeable difference in any of the three categories (participation, perceived understanding, or enjoyment) between same sex and mixed sex workshops. However, women rated themselves much higher in all three categories when they worked in all female groups. These results can be very beneficial for workshop leaders in the future as they can accommodate for gender differences in the co-operative workshop environment to optimize participation, collaboration, and discussion among students.

Theory and Background:

The workshop model of organic chemistry allows students to develop the skills necessary to solve the problems typical of organic chemistry, such as synthesis or mechanisms. Integral to the development of these problem solving skills is the interactions the students share in workshop, and the discussions they have about various ways to solve the workshop problems. This model of problem solving and discussion, proposed by Johnson and Johnson, is known as co-operative learning (Johnson, 1988). They propose that of the three educational interactions, competitive, individual, or
cooperative, students both achieve more and are more positive about education when they engage in cooperative learning. Therefore, one of the main goals of any workshop leader is to optimize the workshop environment so that it promotes this co-operative interaction among the students. When there is continual discussion among students about the workshop material, and exchange of information with the goal of solving workshop problems as a group, co-operative learning has been achieved.

Probably the most difficult challenge a workshop leader faces is promoting this discussion necessary for co-operative learning. In the workshop environment, there is an accumulation of diversity among the ways students interact and communicate with one another, stemming from the unique backgrounds of the students. One of the most basic factors affecting communication styles in a learning environment is gender differences. While lots of research has been performed on gender differences in communication styles, especially in a professional setting, not many connections have been made between communication styles for men and women, and how these differences affect the unique co-operative learning environment. One such study that did investigate gender differences in a workshop setting was performed by the Department of Education at the Washington University of St. Louis, specifically for general chemistry workshops. Some of the main findings of the study, specific to gender differences, were that men enjoyed working collaboratively more so than women (Hockings, 2008). However, this study failed to investigate whether this enjoyment was a function of the gender composition of the workshops.
Hypothesis:

We expect to see a significant increase in self-rating for all three categories being investigated in the same-sex condition for both men and women, and lower self ratings in the mixed-sex condition for both men and women.

Methods:

Our investigation was performed over the span of two workshops, with two different conditions. In the first week, the workshops were held in the same sex condition, meaning that the smaller groups in which the students solved the workshop problems were composed of the same sex. After the workshop was complete, the students were given a self-report survey (Figure 1) to reveal their attitudes about themselves in workshop for the given week. In the second week, the workshops were all held in the mixed sex condition, in which all of the smaller workshop groups were composed of both guys and girls. After this workshop, students were given the same survey as the previous week.

Please circle one.  Male / Female

Rate yourself on a scale of 1 to 5 on the following statements. (1 being “strongly disagree, 5 being “strongly agree”)

1) I participated as much as possible in the workshop. ______
2) I felt comfortable discussing the material with my group members. ______
3) I encouraged others to participate in workshop. ______
4) I felt that I had a good understanding of the material. ______
5) When I did not understand the material, I asked other members of my group. ______
6) I would have had a better understanding of the material if I had used a model kit. ______
7) When doing a synthesis problem, I look for possible disconnections in the product. ______
8) I enjoyed workshop. ______
9) Overall, our group worked well together in the workshop. ______

Figure 1. Self-report survey.
The survey results were summed and averaged for all three workshops, and for each question quantified according to one of the four possible self-report categories: 1) females’ self-report, same sex condition, 2) males’ self-report, same sex condition, 3) females’ self-report, mixed sex condition, and 4) males’ self-report, mixed sex condition. The questions of the survey were grouped according to participation (questions 1, 2, 3, and 5), perceived understanding of the material (question 4), and overall enjoyment of workshop (questions 8, and 9).

**Data and Results:**

For all four conditions, the students’ self-ratings of participation, perceived understanding of the workshop material, and overall enjoyment of the workshop were graphed.

![Figure 2: Self-Assessed participation scores.](image-url)
Questions 6 and 7 yielded no statistical significance, and are thus ignored.

Overall, we observed a drastic difference between the males and females in both
conditions. Across all three categories (participation, perceived understanding, and enjoyment), there was no significant difference for the men between the single sex and mixed sex groupings. However, a drastic difference for the women was observed between the same sex and mixed sex groupings across all three levels. We observed that women rated themselves much higher in participation, perceived understanding, and overall enjoyment when they worked in all female groups in workshops as opposed to much lower ratings in mixed sex groups.

Conclusions:

The results obtained in this experiment supported our hypothesis for the women, but it did not support our hypothesis for the men. There are many possible explanations as to why women displayed such differences in participation, perceived understanding, and enjoyment in the same sex compared to the mixed sex conditions. One explanation for this difference could be due to gender differences in communication styles. A study by Herring revealed that in a professional, educational setting, men tend to interact in a more impersonal, status-imposing manner, whereas women tend to strive to help others, and interact in a more personal manner. These communication differences are clearly reflected in our data. Because men interact in a more status-imposing and inwardly focused manner, their self-ratings will be more a function of their own personalities, and not as dependent on the other people with which they work. Therefore, no real difference was observed between the same-sex and mixed-sex conditions because the men’s participation was not extremely dependent on the other people in the group.
However, we see much different results for women because of the more personal ways in which they communicate. When women were working in same-sex groups, their desire to help each other and reach a common goal toward solving the workshop problem was complimented by the same wants and communication styles of the other women in the group. This complementation of communication styles could have facilitated the women’s participation in workshop, and led to higher self-ratings in all three categories. However, when women were placed in the mixed-sex condition, their communication styles were not complimented well by the men. The more power driven behavior of the men did not compliment the “striving to help others” of the women, which could have inhibited women’s participation in the workshop, and also negatively influenced their understanding of the workshop and enjoyment of the workshop.

Another explanation for the women’s decreased self-ratings in the mixed-sex condition could be that the women felt pressured to perform well when working with men. This added pressure could have led women to be unsure of their answers and more reluctant to participate with the men because they did not want to appear wrong. Inhibiting participation of the women could also have led to a decreased understanding of the workshop because of the less discussion among the group, and a lower enjoyment of the workshop as well.

**Applications:**

While it would not be realistic or practical to separate entire workshop sections by gender there are still some potential future applications of the data obtained from this research project. For example, the workshop leader could occasionally, throughout the
semester, separate the workshop section into same-sex groups and have male vs. female activities. This would be done with the hopes that camaraderie and amity would be instilled in the students and that it would pervade into the normal mixed-sex workshop groups, thus increasing participation, discussion, and ultimately, collaborative learning in future workshops.

In addition, because women seem to increase group participation more so than men do, it might be sensible to form groups with at least one woman. However, a certain balance must be achieved, as a group that is primarily composed of women might cause men to retract and interact less. This might be an interesting area for future research.

Another potential area for future research would be to investigate the role of gender in the workshop leader with respects to the expected results. The same research can be conducted as was described in this paper, but with a female workshop leader as we were unable to account for this in our experimental procedure; perhaps having a female workshop leader could affect females’ participation in mixed-sex groups.

References: