Abstract
Female students are outnumbered by male students in the UM College of Engineering, despite being well represented among the total undergraduate population. In 2009 and 2010, the incoming class in engineering was 23% female, consistent with national trends and reflective of gender stereotypes depicting engineering as a “male” domain. Because there are fewer female than male engineering students, the composition of small groups of students, including those assigned to complete class projects, is likely to be skewed in favor of men. In this study, we draw on research findings from psychology on the influence of gender stereotypes and skewed gender compositions on women working in male-dominated fields as well as education research on self-efficacy and active participation to investigate the effect of being in the gender minority in a small class project group. We address the question: 

Can being in the gender minority have a detrimental effect on learning and motivation for female engineering students?

Study Setting
In Engineering 100: Introduction to Engineering students are assigned to 4 to 6 person teams to complete a semester-long introductory engineering design project. Project teams are created based on several variables including gender, race/ethnicity, living location and skill sets. Overall teams are often skewed in favor of men, with a variety of team gender compositions within any given section. At the end of each semester, teams are required to deliver a final oral presentation. This research project explored the possibility that in mixed gender teams, female students would more often present less technical material, while male students would more often present more technical material.

Results
Data were analyzed using a 2 (student gender) X 3 (group gender composition: male dominated, equal split, female dominated) ANOVA.

Conclusions
Results suggest that women are more likely to adopt passive, supporting roles, and men to adopt active roles in group presentations. Therefore, men may be more likely to “learn by teaching others”. By disproportionately missing the opportunity to explain the technical aspects of the project to an audience, women students may be at a disadvantage both in terms of their technical understanding and their perceptions of self-efficacy in engineering. Results also showed that women rated their own performance higher when in groups with more women, consistent with work showing that women tend to under-perform when in all-male groups.

Acknowledgements
This project was supported by the Center for Research on Learning and Teaching ISL Program and the College of Engineering.