Inclusive Practice Series
PART 2: Inclusive Strategies for Supporting Women in the Classroom

Over the last few decades, the number of enrolled students who identify as women has increased substantially at postsecondary institutions; in fact, as of 2015 the majority (over 56%) of students enrolled in US post-secondary institutions identified as women (NCES, 2018). However, despite their increased presence on college and university campuses, women still face many obstacles in attaining postsecondary degrees, particularly in STEM-related disciplines, due to unconscious gender norms in academic cultures (Blackburn, 2017; Kahn & Ginther, 2017; Master, Cheryan, & Meltzoff, 2016; Stoet & Geary, 2018). As a result, fewer women and minorities decide to pursue STEM-related disciplines. For example, the National Science Foundation (2017) reports that women account for only about:

- 18% of undergraduate computer science majors,
- 20% of undergraduate engineering majors,
- and approximately 19% of undergraduate physics majors.

Additionally, women from underserved minority communities continue to face a double bind in exclusion from STEM fields as both women and persons of color, both in absolute numbers and proportionally when compared to their total population in the US (Blackburn, 2017; Malcom & Malcom, 2011; Ong, Wright, Espinosa, & Orfield, 2011). Also, students who do not self-identify in binary gender terms, but rather self-identify as gender-variant, or transgender, are particularly vulnerable to exclusion in environments where gender norms are unquestioningly accepted as part of the academic culture.

As part of our series on Inclusive Practices, this resource will provide classroom instructors and GSIs with strategies and suggestions for supporting women, both in and out of the classroom. Note: the strategies below also promote general inclusivity, regardless of gender identification, but may be particularly relevant for those who identify as women.

Best Practices for Including Women in the Classroom

Strategies	Explanations & Examples
Avoid engaging in culturally-held stereotypes of women's abilities	Research suggests that while women generally perform as well as men in science and math (Stoet & Geary, 2018), culturally-held stereotypes that suggest women are not as competent as men in STEM-related disciplines persist (Blackburn, 2017; Kahn, & Ginther, 2017). Kahn and Ginther (2017) found that not only did this stereotype manifest early in children's images of themselves as learners, but teachers often unconsciously held this belief as well. This bias can also manifest itself as instructors attempting to be supportive by unconsciously holding women to lower standards than their male counterparts or having lower expectations of women's abilities.
	It is important to recognize and challenge your own implicit bias, and the assumptions and beliefs you may hold about women as learners (for more on engaging with implicit bias, see Part 1). Research also suggests that emphasizing a "growth mindset" (Dweck, 2008) that suggests that intelligence and ability are not fixed but rather grow over time can help to limit women's experience of stereotype threat (see Part 1 for more on stereotype threat) and improve their performances, particularly in math and science (Kahn, & Ginther, 2017).
Create an environment that builds women's sense of belonging	Particularly, in STEM-related disciplines, women can often struggle to feel as though they fit or belong in the classroom (Blackburn, 2017). For example, Master, Cheryan, & Meltzoff (2016) found that when traditional stereotypes about computer science were emphasized, students who identified as women reported lower sense of belonging, or the sense that they would fit in with both other people and the

	activities and materials common to that environment (Master, Cheryan, & Meltzoff, 2016), as well as less interest in taking future computer science classes. On the other hand, Shin et al. (2016) and Herrmann et al. (2016) found that female-identifying STEM majors reported a higher sense of belonging after reading the biographies of successful women in STEM (Shin et al., 2016) and after receiving letters from female role models in STEM fields (Hermann et al. 2016).
	Master, Cheryan, & Meltzoff (2016) suggest avoiding engaging with traditional stereotypes about who belongs in your discipline by diversifying your course content and curriculum. For example, highlighting the achievements of women scholars and/or including course readings or materials written by women may help communicate to those who identify as women that "they are welcome and belong in this environment" which may increase their interest in taking further classes in that field (p. 435). You might consult this handout, which highlights 16 women who have made important contributions to a variety of science fields. You could also have students investigate the research profiles for female Nobel Laureates: for example, here are the profiles for Elizabeth Blackburn and Francoise Barre-Sinoussi. Consider also using examples where the engineer or scientist is from an underrepresented community and/or gender neutral. For example, when showing generic pictures containing humans, integrate images women and people of color. Additionally, try constructing activities or assignments that help students to personalize the content of your course, for example by having them engage with content from diverse role models in STEM fields--this can be encouraging to students who do not clearly fit the traditional mold of members in the field by allowing them to "see" their potential future selves in those role models. This does not mean lower expectations, but rather ensures that all students are given an equitable opportunity to participate in the classroom community and to connect course content to their own lives.
Consider that your office hours may be intimidating for students, especially women	For a variety of reasons, students often feel nervous or anxious about attending office hours (Weimer, 2015). This is a feeling that can be heightened for women who may already be concerned about how they are perceived, particularly by male faculty. Further, the unequal power dynamics that are always at play when faculty and students interact one-to-one can be exacerbated for women by already existing unconscious, gender-based power differences. This fear can result in students forgoing help when they are struggling in class, particularly if they are unaware of other resources that they can access for support. Additionally, students may feel even more intimidated when office hours are only held by appointment, as opposed to being planned, consistent events. Consider holding consistent office hours that are posted in the syllabus, on Canvas, and outside of the physical office door.
	Emphasize your availability for mentoring and support during office hours. At the same time, you can provide students with information about outside resources (see Additional Resources below). Another option is to consider holding office hours in a consistent, public location (such as the library or a coffee shop on campus). Students can meet you individually or in groups to discuss course matters--in fact, encouraging students in your class to come to group office hours, even if they don't have specific questions can help shyer students build the confidence to begin asking questions. All of these alternatives can ensure that students still receive support in their learning.
Consider limiting competition between students within your curriculum	In their extensive review of the literature, Niederle & Vesterlund (2011) found that women and men differed in their preferences toward competition, with men preferring competitive environments and women preferring to avoid them. Research findings indicated that one likely explanation for this difference was that "men tend to be more confident in their abilities than women" (p. 625). As college classes often employ competition as a means of motivation, this can put those who identify as women at a disadvantage, and students from underserved populations as well (Blackburn, 2017; Niederle & Vesterlund, 2011).

	Additionally, competition, particularly in grading practices (e.g., norm-referenced or curved grading), can be detrimental to all students' abilities to learn and retain information, and has been shown to be a contributing factor to the loss of students from underrepresented communities in STEM fields (Schinske & Tanner, 2014).	
	Niederle & Vesterlund (2011) contend that while the clearest solution would be to socialize women to be more competitive, "it is important to ask whether competitiveness, generally speaking, is a desirable attribute" (p. 626). Hyper-competitiveness can be detrimental in collaborative settings, and more broadly. Tinto (1997) found that when students were encouraged to build supportive and collaborative peer networks, academic engagement increased among all students. Designing your course around collaboration and cooperation, as opposed to competition among students, could help boost both men and women's confidence in their abilities, especially if instructors emphasize that all students have valuable contributions to make.	
Be deliberate when designing group projects to ensure equal opportunities for participation	Research on collaborative learning activities suggests that women often experience stereotype threat, feel less accepted, and actually experience less acceptance by their group members when working with men as opposed to women (Grover, Ito, & Park, 2017). This can be especially problematic in STEM fields, where men tend to outnumber women, making it more likely for groups to be male-dominated.	
	Grover, Ito, & Park (2017) suggest that considering gender in group composition, which may include ensuring that women are grouped with at least one other student who identifies as a women either by altering group composition when possible, or creating larger groups, can help to mitigate stereotype threat. Avoid constructing groups with only one women or one person from an underrepresented community. It is also important to emphasize that all group members' contributions are valuable and promote positive interpersonal communication between students. Setting ground rules for group interactions, members' conduct toward each other, and assignment completion can also help ensure that all students are treated fairly (Ambrose et al., 2010). Consider building in structures that facilitate equal participation and shared workload. For example, you could designate particular roles for each individual student (e.g., group recorder, discussion leader, data analyst, etc.) or have students choose to be responsible for particular parts of a cooperative assignment. Make sure that students have a chance to experience a variety of project roles by having them regularly rotate with their peers--this is especially important for women who are often defaulted to the less technical roles in group activities.	

Additional Resources
There are a number of resources for both academic and emotional support available to women on campus. Many of these resources are directed by the Women's Resources and Research Center [WRRC], including:

- W.I.S.E.: Women in Science and Engineering Program
    - W.I.S.E is a mentoring program for women in STEM-related disciplines. The program pair undergraduates students with graduate student mentors in STEM. For more information, email wrrc@ucdavis.edu.
- STEM Cafe
    - According to the WRRC website, "STEM Cafe is a free tutoring service that seeks to create an inclusive space for womxn, trans*, nonbinary, and gender expansive scholars to receive support in Math and Chemistry." The program starts the second week of the term and runs until finals week, and all tutors are upper-level undergraduate students and graduate students in science and math. For more information, email wrrc@ucdavis.edu.

Other on-campus and national resources include:
- ADVANCE UC Davis, Mentoring Resources
  - Resources for both mentors and mentees developed by ADVANCE UC Davis, and initiative on campus to support STEM education for underrepresented groups.
- UC Leads: Leadership Excellence Through Advanced Degrees
  - UC LEADS is a two-year program designed to identify educationally or economically disadvantaged undergraduates in science, mathematics or engineering who show promise of succeeding in doctoral degree programs.
- McNair Scholars Program at UC Davis
  - The McNair Scholars Program is designed to prepare undergraduate students for doctoral studies through involvement in research and other scholarly activities. McNair participants are either first-generation college students with financial need, or members of a group that is traditionally underrepresented in graduate education and have demonstrated strong academic potential.
- BUSP: Biology Undergraduate Research Program
  - BUSP is an intensive enrichment program for undergraduates who have a strong interest in undergraduate research in biology. BUSP students enroll in a specially designed, rigorous academic program during their first two years of college, can work in a biology research laboratory during their sophomore year, and meet regularly with skilled advisers who offer academic guidance and personal support.
- Student-Run Health Clinic Opportunities
  - Medical students, typically in their first or second year, and undergraduates have the opportunity to receive course credit by staffing student-run health clinics in the Sacramento area. These clinics are important avenues for women in resource sharing on and off campus and can provide networks for peer mentoring.
- UC Davis LGBTQIA Center's Guide to Pronouns
  - According to the LGBTQIA Center: "Pronouns are linguistic tools that we use to refer to people. (i.e. they/them/theirs, she/her/hers, he/him/his). We believe that it is important to give people the opportunity to state the pronoun that is correct to use when referring to them." This non-exhaustive guide aims to help faculty recognize and respect the pronouns used by their students.
- Society of Women Engineers
  - This resource includes a mentoring program that feature upper division students mentoring lower division students and also exposes students to female engineering professionals who can act as role models.

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