

## Evidence-based Inclusivity Interventions

Goal	In Class Activities	How does this work?	Based off the research of
<b>Decrease bias against ethnic minorities and women in interested in STEM</b>	Discuss research by a woman or ethnic minority. Show a picture of this researcher	Showing these pictures of accomplished ethnic minorities changes reduces individuals' implicit or unconscious bias against these groups.	Dasgupta & Greewald (2001)
	Another possibility is to show a diverse lab group that worked on a question.	see above	see above
	When having students work together in a group to solve a problem, show a picture of a diverse group of scientist working together.	see above	see above
	When showing research by a female scientist, describe her as a ambitious, competent, go-getter and not "nice"	Women are typically described as "nice" and not "ambitious" which makes them appear less competent.	Madera, Hebl, & Martin (2009)
<b>Reduce Stereotype Threat</b>	When students do a better job on the clicker question the second time, point out that learning and knowledge is malleable. Use their improvement as an example	This shows students that intelligence is malleable and can improve, which reduces stereotype threat in African Americans	Aronson, Fried, & Good (2002)
	At the beginning of a class, tell students you are interested in hearing about them. Then have the students write about something that is important to them (e.g. sports, friends, knitting). Alternatively, when giving an example, have students write why this example may be important some aspect of their life.	Having students write about values (unrelated to the topic of the class) or "self-affirm" reduces stereotype threat in women and ethnic minorities	Miyake, Kost-Smith, Finkelstein, Pollock, Cohen, & Ito (2010)
<b>Increase a sense of belonging in science/ a more inclusive environment</b>	When having students work in a group to solve a problem or answer a question, emphasize that science is collaborative. This type of group work is typical for science.	When science is presented as collaborative/communal, women are more like to be interested in science. Women see science as very individualistic, and there fore at odds with their goals of working well with, and helping others.	Diekman et al. (2011)
	Share some fun facts about yourself, or alternatively some fun facts/hobbies about a scientist who conducted the research you are discussing.	Women who see scientist has people (male or female) as someone they can identify with, and who do not fit the "scientist nerd stereotype" feel more encouraged to pursue science majors.	Cheryan et al. (2011)

<b>Article Key</b>	
<b>Citation</b>	<b>Description</b>
Dasgupta & Greewald (2001)	Showing pictures of accomplished ethnic minorities changes reduces individuals' implicit or unconscious bias against these groups
Stout, Dasgupta, Hunsinger, and McManus (2011)	When female students see female scientist, they have more positive attitudes and feelings towards science. They also feel a sense of belonging in science.
Cheryan et al. (2011)	When female students see a female scientist who they can identify with, or who does not fit the stereotypical scientist "nerd" stereotype, they feel more of a sense of belonging in math and science
Diekmann et al. (2011)	Women are discouraged to pursuing a career in science because they worry science is not communal enough (Concerned with working well with and helping others). When science is presented as collaborative/more communal women are more interested in science.
Murphy, Steele, & Gross (2002)	Also, seeing even number of women and men makes women feel less threatened, and a stronger sense of belonging in a science environment (as oppose to majority males).
Aronson, Fried, & Good (2002)	Believing that learning is malleable reduces stereotype threat in African Americans
Madera, Hebl, & Martin (2009)	Letter writers tend to describe women as "nice" and not "ambitious," which makes them appear less competent.
Miyake, Kost-Smith, Finkelstein, Pollock, Cohen, & Ito (2010)	Self-affirming, or writing about one's important personal values (e.g. friendship or learning) significantly reduces the gender gap on exam grades in an introductory physics class in comparison to a control condition.

**\*This resource was created by Evava Pietri, a former postdoctoral scholar in the Yale Center for Scientific Teaching.**

**Resource Article with Classroom Strategies:**

Kimberly Tanner (2013) Structure Matters: Twenty-One Teaching Strategies to Promote Student Engagement and Cultivate Classroom Equity *CBE – LSE* 12:322–331