Exploring the intersection between student identity and STEM experience
A Facilitator's Guide

Total Class Time: 60 minutes

***piloted at Amherst College in an Introductory Chemistry discussion section with ~25 students

The title was originally "What are the challenges facing underrepresented students in STEM?"

BEFORE CLASS

Advertising

Why are you bringing this module into your classroom? In advance of the actual session, make students aware of the lesson and explain your motivation for introducing it.

Pre-Class Activity for Students

Ask students to draw or describe in a few sentences a typical STEM student at your institution. Students should send their work to the facilitator in advance of class so that responses can be categorized.

Background Readings for Facilitator

Since facilitators are not necessarily experts in this area, the selections below aim to provide a brief orientation to overarching challenges facing underrepresented groups in STEM.

Toward Inclusive STEM Classrooms: What Personal Role Do Faculty Play?:
https://www.ncbi.nlm.nih.gov/pubmed/27496362
Women, Science, and Academia:
http://www.jstor.org/stable/3081968?seq=1#page_scan_tab_contents
Feeling Like a Fraud: http://www.apa.org/gradpsych/2013/11/fraud.aspx
Gender Bias Against Women of Color in Science:
http://www.uchastings.edu/news/articles/2015/01/double-jeopardy-report.pdf
Facilitation Tips
https://www.brown.edu/about/administration/sheridan-center/teaching-learning/effective-classroom-practices/discussions-seminars/facilitating

Additional background readings, broken down by race, nationality, gender, sexual orientation, and socioeconomic status can be found under the 'Resources' tab at www.beinghumaninstem.com

Materials

- Pre-Class Activity - Draw or Describe a Typical STEM student at [YourInstitution] (to be solicited and collected by facilitators pre-workshop)
- cards for STEM experience intersection with identity reflection
- Physicist trading cards for group sorting
- Poster paper or whiteboard
- Elevator pitch handout
- Feedback form

IN CLASS

***slides used during workshop will be available

Organization

As students come in, have them pick up physicist trading card that will later be used to randomly separate them into discussion groups of around five.

Introduction and Ground Rules (8 minutes)

Facilitation team introduces themselves

Provide context on why you are offering this workshop

- Campus context
- Bigger picture

Ask the students to suggest ground rules and post in visible location. Here are a few that we recommend if you need to jumpstart the conversation:

- Your truth is A truth not THE truth
- Speak from the "I" perspective
- Assume best intentions
- Practice "both/and" thinking instead of "either/or"
- Expect and accept non-closure
- Take 100% responsibility for your own learning
- Expect discomfort
- Challenge and support

Pre-Class Activity Reflection (7 minutes)

Present recurring descriptors from the pre-class activity to the class - what trends emerged from the students' submissions?

As a class, students then brainstorm responses to the question, "How might different facets of an individual's identity influence their experience as a STEM student?"

- Facilitator records responses on poster paper or whiteboard

Next, show representative statistics to compare what students believe the typical STEM student looks like with the reality (Ideally from your own institution).
http://www.beinghumaninstem.com/the-amherst-context.html

Individual Index Card Writing (5 minutes)

Have the students write a few sentences on an index card answering the following questions about their personal experiences in STEM, reminding them that responses will be shared anonymously:

- *What have been the defining characteristics of your STEM experience? Do you feel like aspects of your identity have played into your experience, whether positive or negative?*
- *Have you encountered any obstacles during your STEM experience, and what has helped to overcome those obstacles?*

Facilitator collects and shuffle the cards.

Small Group Discussion (15 minutes)
Ask students to organize themselves into groups based on physicist trading card they picked up at the beginning of the session.

Facilitator passes out five of the mixed-up index cards to each group. After reading and discussing the responses, students should categorize them into three or four themes or patterns that stand out and record onto poster paper or dry erase board.

Emerging themes from our collective STEM experiences: Class-Wide Share (10 minutes)
Each group reports their top themes to the class. Facilitator creates a list of all responses on poster paper or dry erase board, indicating if the same theme is reported by multiple groups.

Give students an opportunity to share their reactions to the writing exercise and emerging themes.

***At this point in the workshop, we shared responses from interviews with actual Amherst STEM students - you might use these quotes or replace with quotes from your own students.

- *"[Professors] were these Ph.D.'s, super renowned, and I was just a kid from back home, from public school."*

- *"Approaching science from, "I have a family where all they've done is academia," is very different from, "My mom is unemployed," ... Something I think that STEM professors don't realize is that a large majority of people go into STEM because they believe that it's going to help make them money. They come from disadvantaged backgrounds, and a lot of those kids fail."*

- *"As soon as the female black math majors found out I was interested in math, they immediately took me under their wing. They told me what classes to take, what professors to stay away from...but they immediately mentored me into the major... a lot of times, students of different backgrounds don't have that resource coming straight in."*

Expanding the conversation to include other humans in your life (10 minutes)
As a debrief, have students construct a 1-minute elevator pitch to start a conversation about the intersection between student identity and STEM experience.

Students test their pitches on partner. Suggest testing the pitch on different individuals over break(peer, coach, professor, family) and possibly refine and personalize based on relationship.

HEARTFELT THANKS
Facilitator reiterates why this conversation is so important, and lets students know they will receive an email with a link to a feedback survey.

Collect all materials generated to help with feedback

EMAIL REQUEST FOR FEEDBACK

***We found students very receptive to the idea of that they were "field testing a pilot workshop" as opposed to simply participating in a workshop scheduled during their normal Introductory Chemistry class. They seemed to appreciate that their feedback was being solicited and that they could help in improving/shaping a resource that we were developing.

Dear [Class name] students,

Thanks again for your engaged and thoughtful participation in the field-test of our workshop "Exploring the intersection between student identity and STEM experience" today! We hope that your handout with notes can be your own personalized reference guide for helping take this conversation beyond our workshop! Challenge each other to try your pitch on peers, professors, family members (STEM and non-STEM). Consult www.beinghumaninstem.com if you would like more background, and feel free to reach out to continue the conversation with any of us.

Please share your anonymous feedback by visiting this link (which we will also send in an email): https://www.surveymonkey.com/

- *What did you find engaging about the activities? What could be adjusted? Can you think of for other ways for participants to engage with each other around the topic of challenges of URM students in STEM?*
- *What other workshop topics do you think are needed to help all Humans in STEM teach and learn in an equitable, inclusive manner?*
- *Do you have ideas for how to help start these conversations in settings that reflect the full representation of introductory STEM classes? How did it feel to participate with your peers in your chemistry class?*

In gratitude,
2016 Humans in STEM