Supplemental Material

Appendix

My Science Academic Pathway
Facilitator Instruction
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BUILD PODER

Trainee Level: Undergraduate or graduate students with novice to advanced level research experience

Primary Theme: Using CRT and QuantCrit, to understand the shrinking scientific community as students navigate through higher education and to better understand the importance of building a supportive environment which may require navigating different spaces on college campuses.

Learning Objectives:
Trainee will:
- Be able to track their own academic pathway using NSF databases with the following variables: sex, grade level, race/ethnicity, specific major or field.
- Understand "leaky pipeline" problem in STEM.
- Identify and be able to create supportive environments on their college campuses across the different levels of education (undergrad, graduate, postgrad).

Activity Components and Estimated Time for Completion:
- In session time: 45 minutes to 60 minutes

When to use this activity:

This activity can be introduced at any time in the research experience, but it may prove to be most effective if it is implemented towards the beginning of the training to increase students' ability to develop a supportive network or support systems in order to be successful in their current level.

The aim of the activity is to help students understand the importance of developing a supportive environment, especially when students go on to graduate school and find it less diverse or find that students may not share similar characteristics (e.g., gender, ethnicity/race, SES, etc.).

Facilitator Preparation:
Become familiar with the NSF *Women, Minorities, and Persons with Disabilities in Science and Engineering (WMPD)* digest and data sets. WMPD in Science and Engineering provides statistical information about the participation of women, ethnic minorities and people with disabilities in science and engineering education and employment. A report (digest) is published every two years. Available at https://ncses.nsf.gov/pubs/nsf19304/digest

Note: This link is for the 2019 data set is available at https://ncses.nsf.gov/pubs/nsf19304/data NSF updates it every two years, so the link and the data sets may change. It may be necessary to search for the any of the following keywords to reach the correct page: NSF, Women, Minorities Science

Introduction (5 – 10 minutes)

Discussion: Begin a discussion about what it means to be a person (with their characteristics) in academia/ in STEM majors. What are some of their concerns/fears/worries as they move across levels?

Activity

Tools: Computer or tablet and internet access. It will be more challenging to use the data using a smart phone.

1) Using ***Table 1-2 U.S. Demographics*** trainees should be able to identify their group based on their characteristics (sex, age, race/ethnicity) to get a baseline of what is the U.S. population that meets their demographic characteristics.
    a. For example, in 2017, there were 24,858,794 Female Hispanic/Latinas (of all ages) living in the U.S., compared to 18,068,530 Male Black/African Americans.
    b. It is important for students to have a baseline so they can compare the numbers they will track across different education levels.
    c. Trainees will write down the number of the group that matches their demographics. They will use the same demographics as they go across different data tables.
2) For trainees who attended community college first, using **Table 2-3**, ***Undergraduate enrollment at 2-year institutions, by citizenship, ethnicity, race, sex, and enrollment status: 2006–16***, trainees will identify their group based on their characteristics and whether they were full-time or part-time enrolled. In this table, the most current year is 2016, and that is what should be used, unless a student began community college at an earlier year (e.g., 2015).
3) Do the same for 4-year institutions, Table 2-4, ***Undergraduate enrollment at 4-year institutions, by citizenship, ethnicity, race, sex, and enrollment status: 2006–16.***
4) Have students track graduate enrollment Table 3-5, ***Enrollment status of S&E graduate students, by field, citizenship, ethnicity, and race: 2016.*** For graduate enrollment, trainees can select field of study.
5) Next, trainees will track graduation statistics by grade level:
    a. Associates Degree: Table 4-3
    b. Bachelor's Degree: Table 5-7
    c. Master's Degree: Tables 6-3 (total), 6-4 (women) or 6-5 (men),
    d. Doctoral Degree: Tables 7-1 (total), 7-2 (women), 7-3 (men)

As the facilitator, you will find that there are so many directions you can take this activity. You can select by Hispanic Serving Institution (HSI), Tribal College, Historically Black Colleges and Universities (HBCU). You can even go into post-doctorate and employment.

6) Once the trainees have written down their numbers for the education levels you require, have the students reflect on the numbers they see across the education levels. Ask trainees to write a paragraph or two and answer the following questions:

❖ Write about your own academic pathway in your STEM field. How do the numbers look like as you move along the academic path? How does this make you feel?
❖ Knowing the numbers before you, what can/will you do to ensure that you find a supportive environment with people that may share some of your characteristics? And where can you find people that may share some (if not all) of your characteristics across campus?

The remainder of your time should be spent on students' reflections of their pathway. Have them share their numbers and what it means for them as they move along across different levels (undergrad, masters, doctorate).

Help them think about what resources they can seek out at the different levels, such finding people who share some of their characteristics in other grad programs around the university. Where can they look? Are there spaces on campus where they may find some peers? Clubs/organizations?