

# GOT STEM\* IDENTITY?

\*STEM: SCIENCE, TECHNOLOGY, ENGINEERING, & MATH

## What is STEM identity?

"The way people make the concept of fitting in within STEM fields, specifically, the way individuals make 'meaning of science experiences and how society structures possible meanings' " (Singer et al, Carlone & Johnson).



We want to be mathematicians!!

I am a scientist!  
I want to make our lives better!



## What are the 3 dimensions of STEM identity?

Carlone & Johnson modeled how STEM identity is established in three dimensions. These dimensions, particularly recognition, are important to maintain a strong STEM identity.



### Competence:

acquiring knowledge and understanding content

### Performance:

social performance of relevant scientific practices  
(e.g. presenting one's research to the public)

### Recognition:

self-recognition and validation from others for one's competence (e.g. appreciation of one's work from a mentor)

# Why is "Recognition" important for STEM identity?

- Carlone and Johnson (2007) found that career pathway trajectories differed among women of color in STEM majors with strong academic records. Students who were recognized by others experienced smoother advancement along their STEM career path, compared to those who were not.
- Lane (2016) also shows that improving retention of STEM major students of color partly depends on STEM identity development.

"Oh, she remembers me. I was actually important, you know. "

*A student whose research advisor recognized the student's past work .*



Quotes from Lane (2016).

*A student about to change majors was recognized as a high achieving student at a banquet.*

"I was like, what? [I] couldn't believe it. It's just that encouragement."

## How can you foster students' STEM identity?

Utilize the tips from our previous infographics:

- Acknowledge and Celebrate Students' Progress
- Embrace a Growth Mindset



### References

- Carlone, H. B., Johnson, A. Understanding the Science Experiences of Successful Women of Color: Science Identity as an Analytic Lens. Journal of Research in Science Teaching 44 (8), 1187-1218 (2007)
- Singer, A., Montgomery, G., and Schmoll, S. How to Foster the Formation of STEM Identity: Studying Diversity in an Authentic Learning Environment. International Journal of STEM Education 7:57 (2020)
- Lane, T. B., Beyond Academic and Social Integration: Understanding the Impact of a STEM Enrichment Program on the Retention and Degree Attainment of Underrepresented Students. CBE Life Sciences Education 15:39 (2016)