

Building Students Science Identity

Session goals:

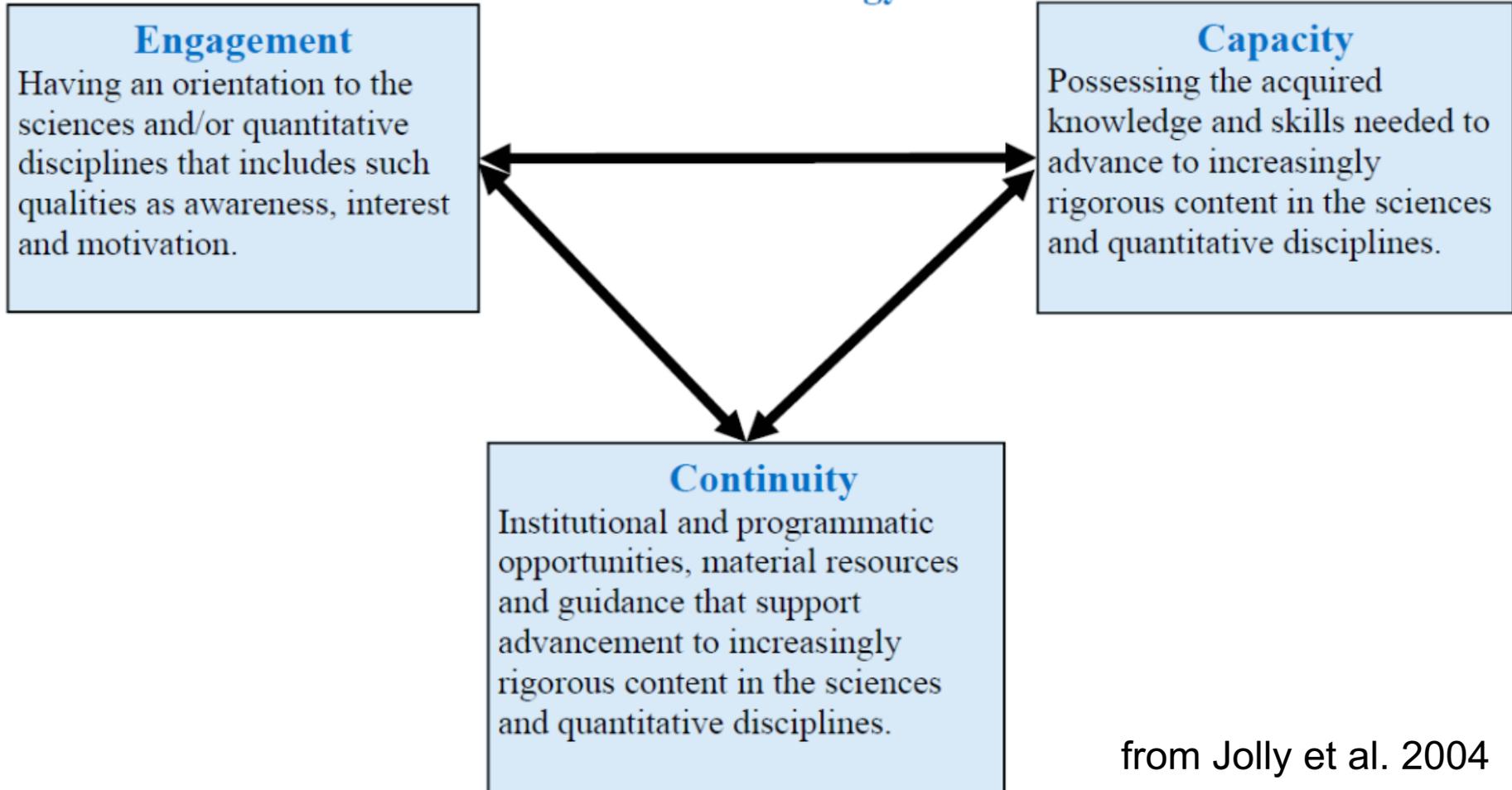
- How might we help build our students abilities to perceive of themselves as future scientists?
- How might we provide diverse perspectives in our courses and programs?
- How might we infuse career information throughout the curriculum?

Rachel Beane and Stefany Sit

Building from the SAGE2YC Faculty as Agents of Change 'Science Identity' session.

Strategies to Support All Students

The ECC Trilogy



from Jolly et al. 2004

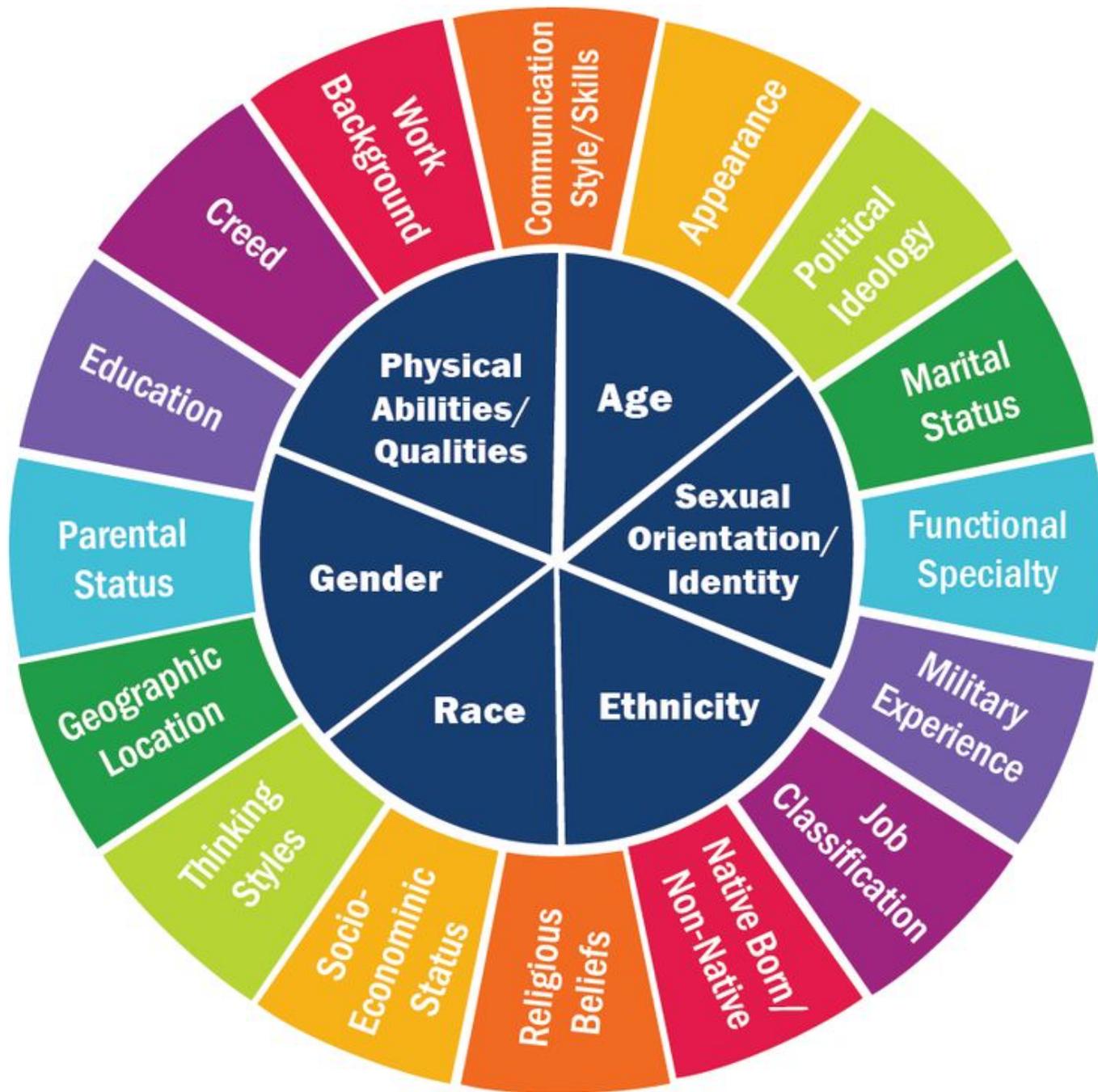


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*Interdisciplinary Teaching about Earth
for a Sustainable Future*

What are your identities?





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*Interdisciplinary Teaching about Earth
for a Sustainable Future*

Picture an
earth or environmental scientist





If students hold stereotypes that portray scientists as a different 'kind of person' than themselves, those students might conclude they are not 'science people.' This mismatch between a student's personal sense of identity and a science identity can hamper persistence in STEM.

Schinske J., Perkins, H., Snyder, A., and Wyer, M. (2016). Scientist Spotlight Homework Assignments Shift Students' Stereotypes of Scientists and Enhance Science Identity in a Diverse Introductory Science Class. *CBE - Life Sciences Education* 15 (3)

SCIENTIST SPOTLIGHTS: WEEKLY METACOGNITIVE EXERCISES TO SHIFT STEREOTYPES AND ENHANCE SCIENCE IDENTITY

“Scientist spotlights” are weekly online homework assignments featuring diverse scientists related to upcoming course content, developed by Jeff Schinske, a Biology faculty member at DeAnza College

Goals:

- Introduce new course content using the stories of scientists**
- Encourage students to reflect on their learning & confusions**
- Enhance students’ science identity & sense of belonging**

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Scientist Spotlights: Weekly Metacognitive Exercises to Shift Stereotypes & Enhance Science Identity

Please spend approximately 40-60 minutes responding in writing to the following prompt.



We will soon be looking into the body's defenses and the microbes with which our bodies interact. This leads us to our next scientist. Lawrence David is a Filipino-American biologist currently working as a professor at Duke University and Harvard. His work focuses on the trillions of bacteria that live on and in the human body, and he is particularly interested in how bacteria contribute to health and disease in the developing world, including in Bangladesh and other non-western areas. He also helped start a website to showcase illustrated, science-related poetry (<http://www.sciku.org/>).

Please [click here](#) and listen to the story told by Lawrence David. A written transcript of this story is available [here](#).

Next, [click here](#) to read a 2013 *Nature* article by Lawrence David reporting on some of the striking results of his work.

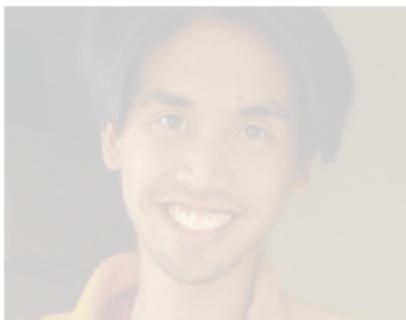
Write a 350 word or more reflection with your responses to what you heard. You might discuss:

- 1) What was most interesting or most confusing about the podcast and article?
- 2) What can you learn from the podcast/article about the relationships between our body and bacteria?
- 3) What does this podcast/article tell you about the types of people that do science?
- 4) What new questions do you have after hearing the story?



Scientist Spotlights: Weekly Metacognitive Exercises to Shift Stereotypes & Enhance Science Identity

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BIBLIOGRAPHIC INTRODUCTION

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LINKS TO STORIES, PODCASTS, etc.

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REFLECTION ASSIGNMENT

Scientist Spotlight Resources

- [Counter-stereotypical Geoscientist Career Profiles](#) developed by Jan Hodder, Oregon Institute of Marine Biology, University of Oregon, for the SAGE 2YC project
- [transverse RANGES](#): (tR) interview-format articles celebrating diversity of individual geoscientists
- [Time Scavengers' "Meet the Scientists"](#): Stories of geoscientists, what type of data they use, why they enjoy science, and their advice for young future scientists.
- Kappel, E.S. (Ed) [Women in Oceanography - A decade later](#). Oceanography 2014 Vol 27 no.4 supplement
- [Secret Lives of Scientists and Engineers](#) is an Emmy-nominated web series and site from PBS's NOVA.
- [Black History Month: Making History in the Geosciences](#) is a blog post about four extraordinary Black geoscientists.

2016 NATIONAL GEOSCIENCE FACULTY SURVEY



National Science Foundation
WHERE DISCOVERIES BEGIN

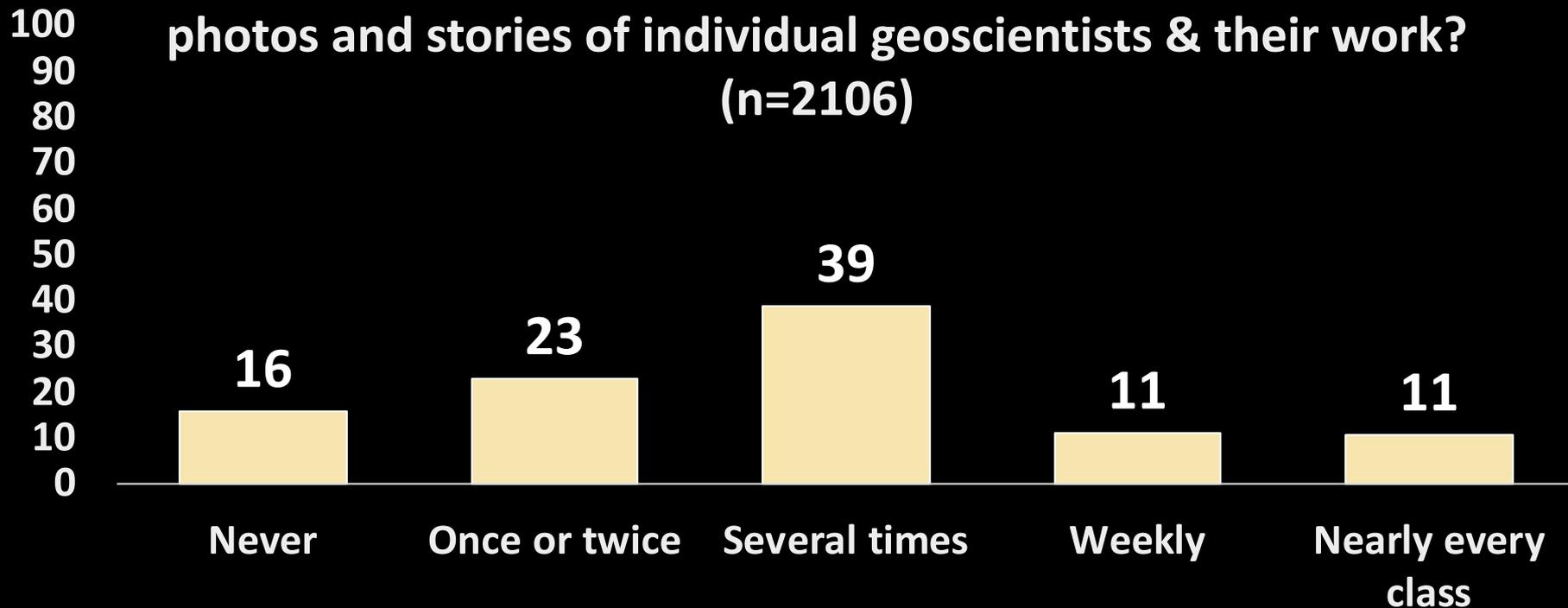


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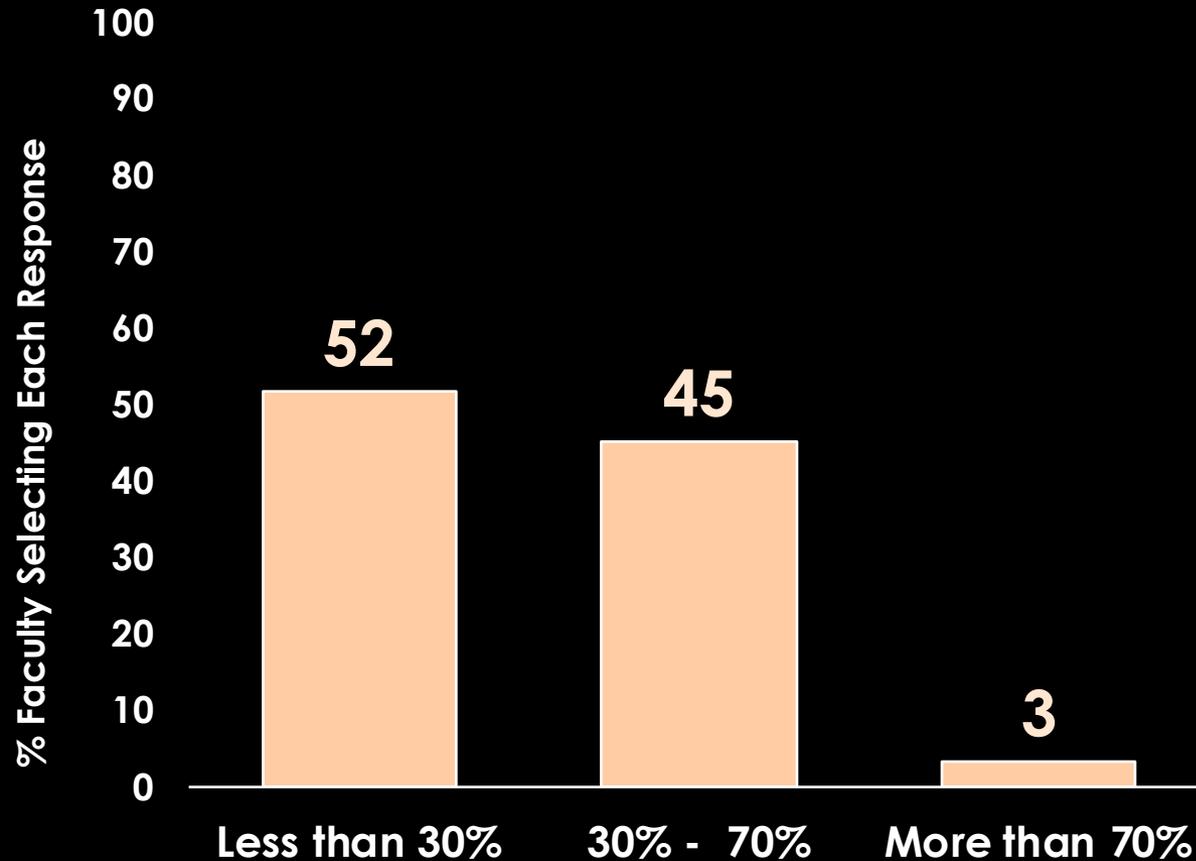
Disclaimer: Any opinions, findings, conclusions or recommendations expressed in this work are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

GEOSCIENTIST REPRESENTATIONS

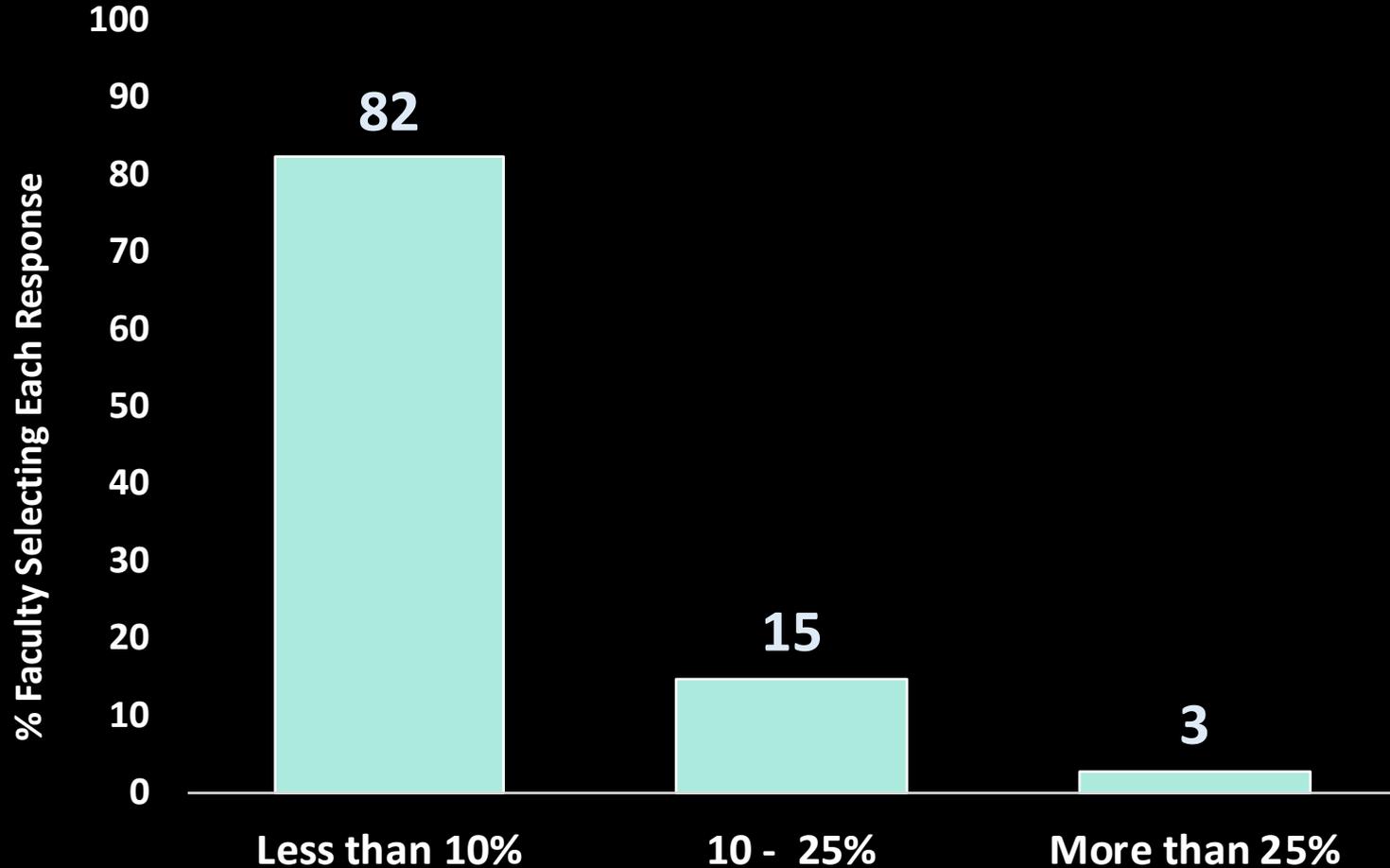
In your course, please indicate how frequently you include photos and stories of individual geoscientists & their work?
(n=2106)



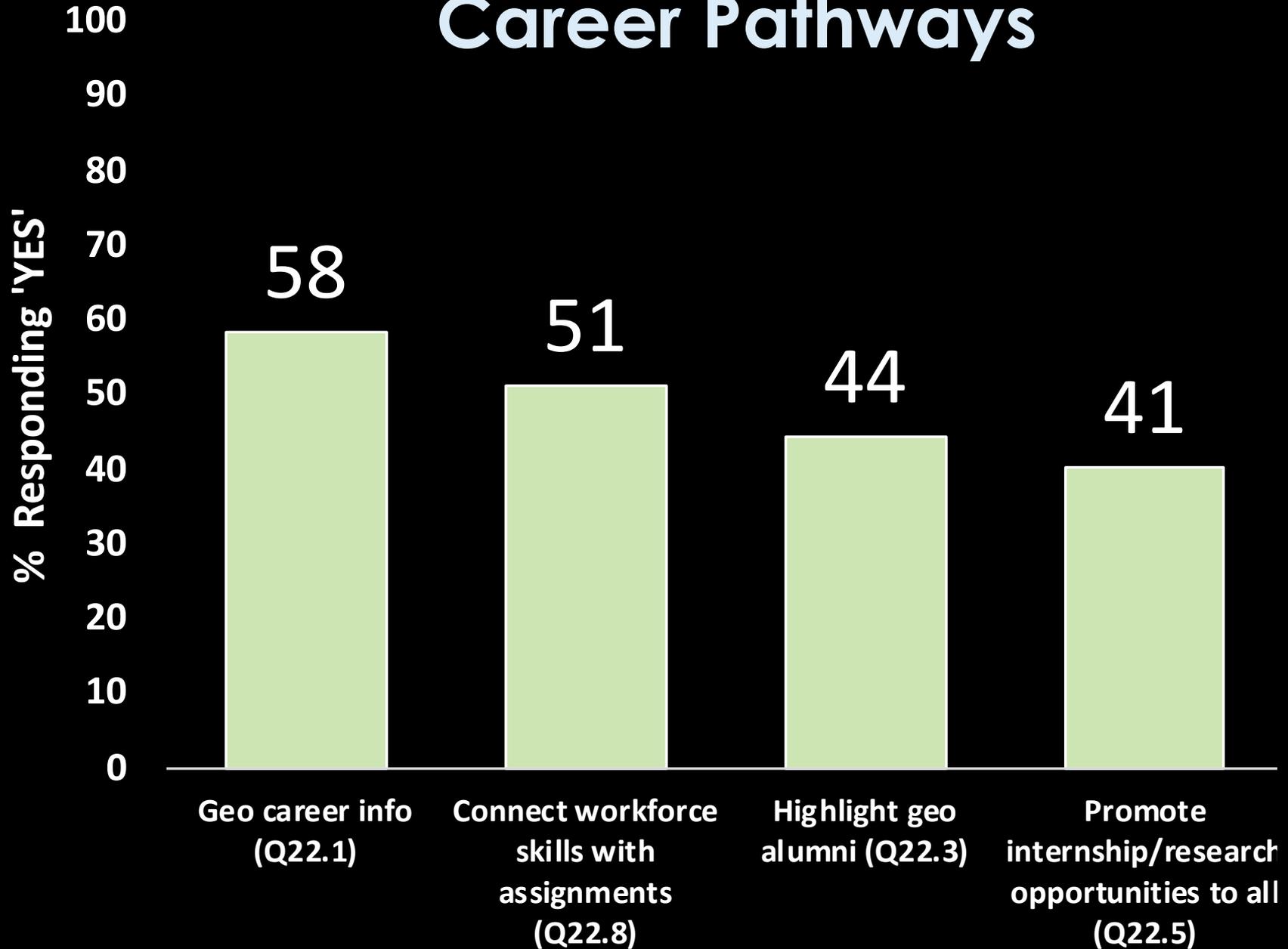
What percentage of the geoscientists included are female? (n=1749)



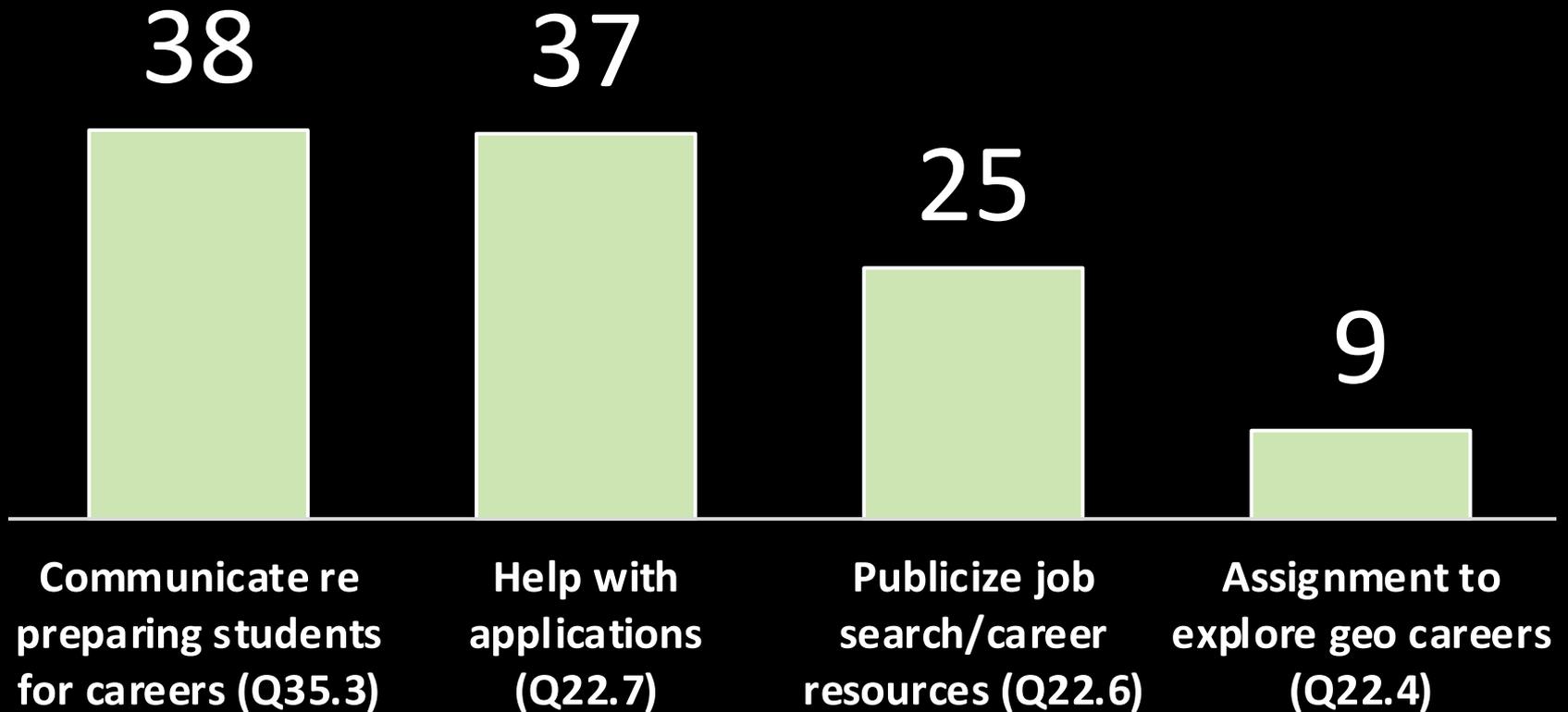
What percent of the geoscientists included are people of color? (n-1746)



Career Pathways

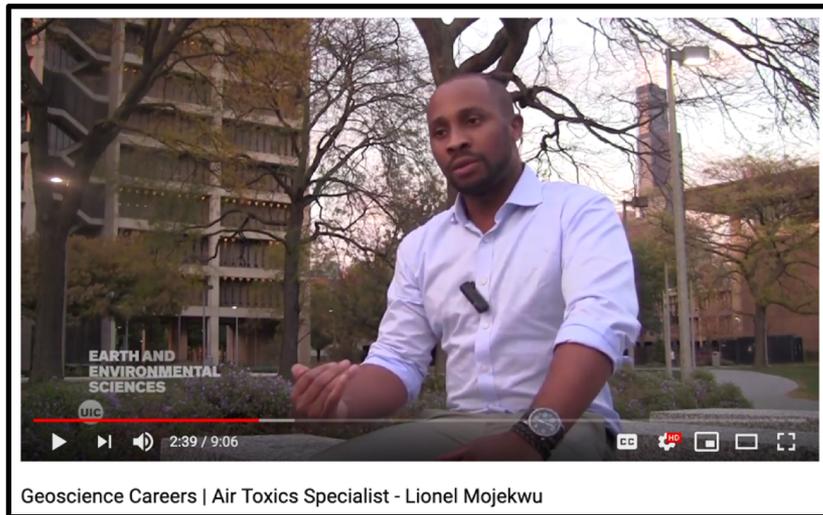


Career Pathways

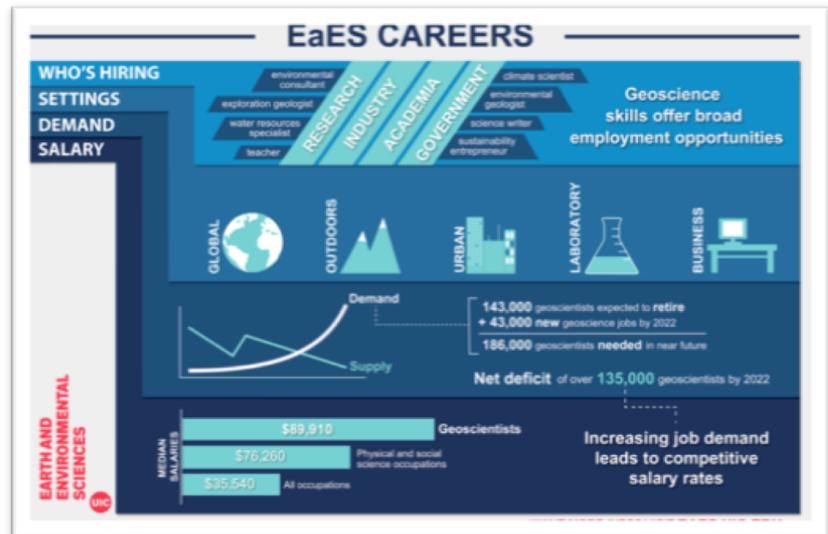


Highlighting Career Pathways – Example

- Alumni Interviews on YouTube



- Career Awareness Poster/Postcard (English and Spanish)



Highlighting Career Pathways – Example

- Resume Jigsaw Assignment

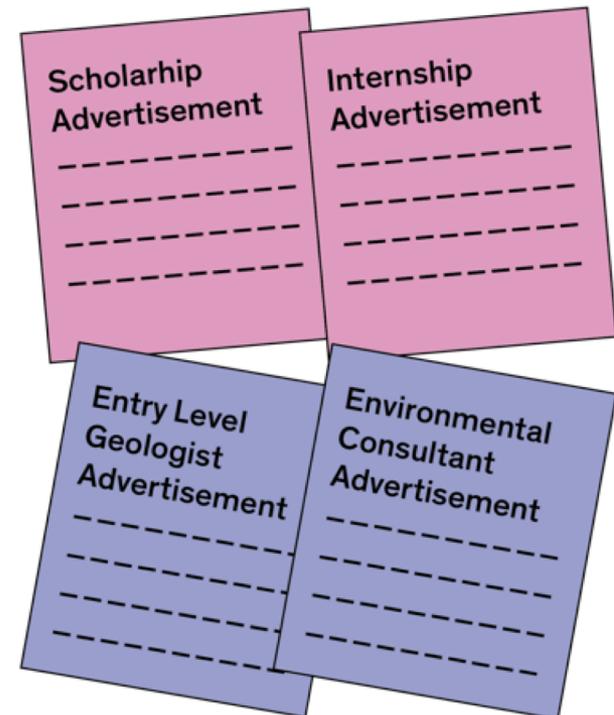
RÉSUMÉ JIGSAW ASSIGNMENT

Assignment - Students compete for different job openings by writing a winning résumé. Students choose the scholarship, internship, or job ad they want to apply for and create a résumé that will highlight their relevant experiences.

Gallery Walk - During the next class meeting, students will go through a gallery walk, where each ad and associated student résumés will be available. Students will evaluate the résumés and vote on their favorite. At the end of the gallery walk, students should have a discussion about what was successful about different resumes.

Optional - Students revise and edit their own resumes after the discussion and turn in the updated resumes for a grade.

Reach Out to Career Services - For this assignment, you may want to reach out to your Office of Career Services for help finding recent job ads and have them present to the class on resume writing.



For the full assignment:
Check out the UIC InTeGrate site



Building Students Science Identity

In this session we've discussed:

- Representations of earth and environmental scientists
- Scientist spotlights
- Career pathways information



Building Students Science Identity

Other suggestions include:

- Be explicit about the process of science (include failures not only successes)
- Include topics relevant to students' lives
- Allow students to practice doing science (and let them know when they are doing what scientists do)

YOUR TURN: GALLERY WALK

Count off 1- 8, Start at your number and introduce yourselves.

1. What can we do in our class to bring diverse representations and perspectives to our students?
2. What can we do in our programs bring diverse representations and perspectives to students in our programs?
3. What can we do in our classes to develop an understanding of what an earth/environmental scientist does?
4. What can we do in our programs to develop an understanding of what an earth/environmental scientist does?

**Review the responses to each question
and choose **one thing** for each question
that you would consider doing.**

Put a dot by your choice.



Reflection

- What might you do to help your students build a science identity?
- What diverse perspectives might you bring to your next class?
- What might you do to infuse career information in your program's curriculum?