

BS degrees awarded by race/ethnicity 2014

Race or Ethnicity	% of population	Ocean Science BS (%)	Earth Science BS (%)
White	62.1	80	80
Hispanic	17.4	6.8	7.7
Black	12.4	3.2	2.1
Asian	5.3	6.8	3.3
Am. Indian/ Alaska Native	0.7	0.4	0.7

<http://www.nsf.gov/statistics/2017/nsf17310/tables.cfm>

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TREND IN POPULATION CHANGE IN US IN NEXT DECADES

Race or Ethnicity	% of population	Ocean Science BS (%)	Earth Science BS (%)
White	62.1 ↓	80	80
Hispanic	17.4 ↑	6.8	7.7
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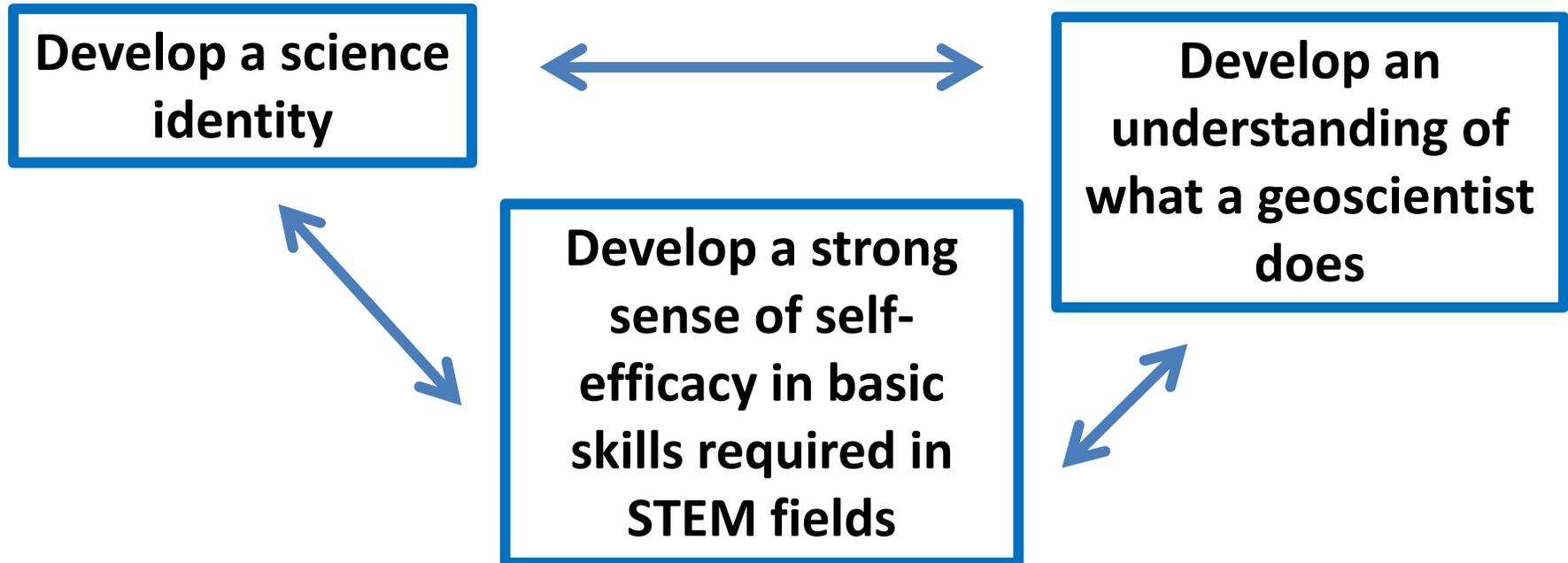
Google image search for GEOLOGIST



Google image search for OCEANOGRAPHER



Becoming a Geoscientist



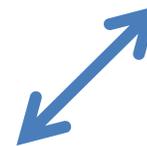
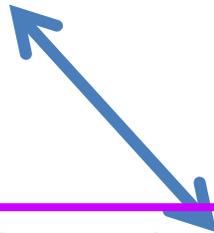
Becoming a Geoscientist

Develop a science identity

Develop an understanding of what a geoscientist does

Develop a strong sense of self-efficacy in basic skills required in STEM fields

The psychological processes by which people become inspired by STEM to the point of personal relevance, ownership, and integration into the sense of self.



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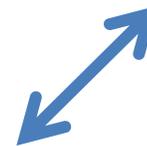
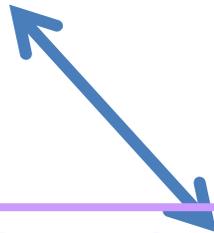
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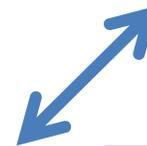
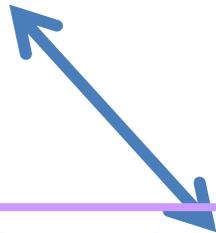
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Geoscientists work to discover natural processes on earth, including the ocean, and other planets.



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THE PROBLEM OF STEREOTYPES

SCIENTIST SPOT LIGHTS:

WEEKLY METACOGNITIVE EXERCISES TO SHIFT STEREOTYPES AND ENHANCE SCIENCE IDENTITY

WEEKLY ONLINE HOMEWORK ASSIGNMENTS FEATURING DIVERSE SCIENTISTS RELATED TO UPCOMING CONTENT

Goals:

- Introduce new course content using the stories of scientists studying in the field**
- Enhance students' science identity and sense of belonging**

Schinske, J., Cardenas, M., and Kaliangara, J. 2015. Uncovering Scientist Stereotypes and their Relationships with Student Race and Student Success in a Diverse Community College Setting. CBE - Life Sciences Education 14 (3): 1-16.



Dr. Pranoti Asher is the Manager of Education and Public Outreach programs for the American Geophysical Union Prior to joining AGU, she was a geoscience faculty member at universities and community colleges.

Resources you could use

- Career profile at SERC site:
<http://serc.carleton.edu/NAGTWorkshops/careerprep/jobsearch/altcareers/asher.html>
- Diversity programs that Pranoti is responsible for running:
<https://education.agu.org/diversity-programs/>



Dr. Adrienne Block is a geologist who studied Antarctic ice sheets looking at the question, “How fast can you get rid of an ice sheet”. Since graduating with her Ph.D. from Columbia University she has worked for Chevron in a number of capacities. She plays the bassoon.

Resources you could use:

- The Secret Life of Scientists and Engineers site on Adrienne Block while she was a Ph.D. student, it includes several short videos about her life:
<http://www.pbs.org/wgbh/nova/blogs/secretlife/earth-science/adrienne-block/>
- Her linked in profile that shows the positions she has held at Chevron:
<https://www.linkedin.com/in/adrienne-block-4300b340>



Dr. Joseph Montoya is a biological oceanographer at the Georgia Institute of Technology. He studies the marine nitrogen cycle and has been involved in studies of the impact of the Deepwater Horizon oil spill on offshore ecosystems of the Gulf of Mexico.

Resources you could use:

- Webinar for the National Science Ocean Bowl with Dr. Montoya that provides an overview of the movement of oil and gas carbon into the pelagic food web. He discusses the Deepwater Horizon spill as well as other spills and some of his ongoing work on natural seeps: <http://nosb.org/learn/professional-development/professional-development-archive/professional-development-201415-series/guest-expert-dr-joseph-montoya/>
- Article from the Gulf of Mexico Research Initiative that includes Montoya's role in the immediate aftermath of the Deep Water Horizon spill: <http://gulfresearchinitiative.org/scientific-dream-team-conducts-rapid-response-research-at-hercules-gas-blowout/>
- Web page about his work with the Schmidt Ocean institute as chief scientist measuring river input to the south China sea: <http://schmidtocean.org/person/joseph-montoya/>

“Look like Me” 2YC Geoscientists



Kelsey Putman Hughes is a Senior Geologist working in the oil and gas industry in Tulsa, Oklahoma; specializing in facies analysis and the relation to well performance. The summer of her freshman year at the University of Wisconsin-Richland (AAS, 2006) Kelsey began a micropaleontology research project that she continued at the University of Wisconsin-Oshkosh (BS, 2008) which won an Undergraduate Research Poster award from the Geological Society of America. Kelsey continued her work in micropaleontology and geochemistry at the University of Missouri (MS, 2010) where she studied the paleoclimate of the Late Ordovician using stable isotopes as a proxy for sea water temperatures. In addition to degrees in geology, Kelsey also earned a graduate minor in College Science Teaching from the University of Missouri (2011) which she applies to her professional life by mentoring, and leading and developing field programs for young professional geologists. Outside of her geology work, she spends her down time being an adventure photographer and advocating for public lands.

Resources you could use:

- Her professional and academic career with job duty descriptions: <https://www.linkedin.com/in/kelsey-putman-hughes-4422a057/>
- Her photography website: <http://corvidbluestudio.com/>
- Abstract to a recent professional paper she co-authored based on her MS work: <http://www.micropress.org/microaccess/stratigraphy/issue-323/article-1973>

“Look like Me”

2YC Geoscientists

Caroline Amelse is a geologist with plans to complete a PhD in geotechnical engineering. As a 2YC student at Waubensee Community College, she completed an independent research project centered on seismology. During her geology undergraduate degree at University of Rhode Island (BS, 2017), she worked on an independent research project focused on sea-level research using foraminifera assemblages as a proxy. The American Geophysical Union awarded her with the prestigious David E. Lumley Young Scientist Scholarship for her research. For her master's degree and PhD at University of Washington, she will study landslides and liquefaction. Her first bachelor's degree was in social work (BSW 2013, University of Hawaii).



Your Turn: Helping Students Develop a Science Identity

GALLERY WALK

- 1. What can we do in class and online to develop science identity in our students?**
- 2. What can we do outside of class to develop science identity in our students?**
- 3. What can we do in class and online to increase a student's science self- efficacy?**
- 4. What can we do outside of class to increase a student's science self-efficacy?**
- 5. What can we do in class and online to develop an understanding of what a geoscientist does?**
- 6. What can we do outside of class to develop an understanding of what a geoscientist does?**

Count off 1- 12, Start at your number – 3 mins/topic

Your Turn:

- Review responses to each question and choose the 3-4 things from the posters that you would consider doing.
- Put a colored dot by your choice

REFLECTION

What will you do to help your students build a science identity?

What will you do to build a student's science self-efficacy with respect to the geosciences?

What will you do to infuse geoscience career information throughout your teaching?



SAGE 2YC

2yc Faculty as Agents of Change