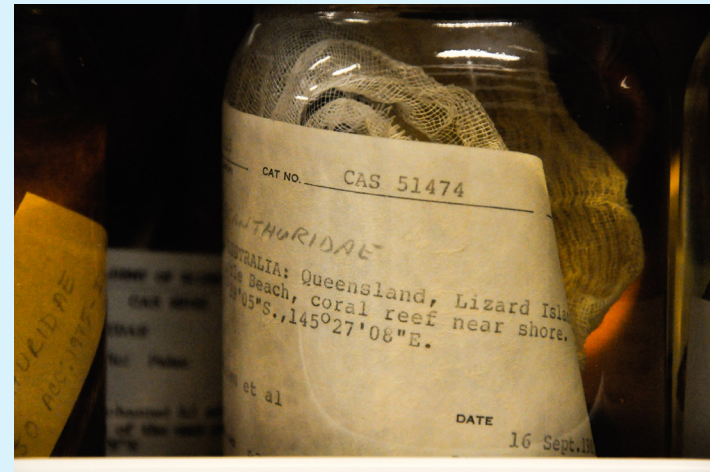




Elementary students on a field trip at the Darling Marine Center (Maine)



Students in the Minorities Striving and Pursuing Higher Degrees of Success in Earth System Science (MS PHD'S®) program behind the scenes at the California Academy of Sciences



BROADENING PARTICIPATION IN SUMMER RESEARCH PROGRAMS FOR UNDERGRADUATES



Program Director Dr. Rick Wahle with Gulf of Maine and World Ocean REU students Alexandra Lopez, Alexander Vermont and Louisa Walker on the annual research cruise (2011).

The Institute for Broadening Participation (IBP) is a non-profit organization dedicated to designing and implementing strategies to increase access to STEM (Science, Technology, Engineering, and Mathematics) education and careers for diverse underrepresented groups.



This project funded by NSF-OCE Grant # 1014125

Pathways to Ocean Sciences

The Institute for Broadening Participation (IBP)

Pls: Ashanti Johnson & Allyson Fauver
Team members: Liv Detrick, Susie Valaitis, Sandra Thomas, Dana Saywell, David Seigfried, Chris Cash

What is “underrepresentation”?

Underrepresentation often refers to “people from groups who have historically been denied access or faced steep barriers to accessing higher education in the US.”

UNADVANCE, “Interrupting Bias in the Faculty Search Process”
<http://www.wpiwashington.edu/facultysearch/>

The following groups of individuals are considered underrepresented in STEM fields:

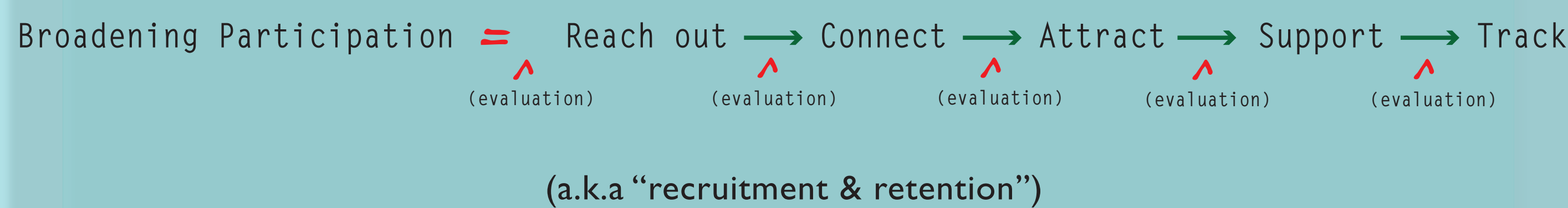
Native Americans
Alaska Natives
Blacks or African Americans
Hispanics
Native Hawaiians
other Pacific Islanders
Women
Persons with Disabilities

NSF defines underrepresentation also in terms of “individuals from institutions and geographic areas that do not participate in NSF research programs at rates comparable to others.”

NSF, “Broadening Participation at the National Science Foundation: a Framework for Action” (2008)
http://www.nsf.gov/pubs/broadeningparticipation/nsf_frameworkforaction_0808.pdf

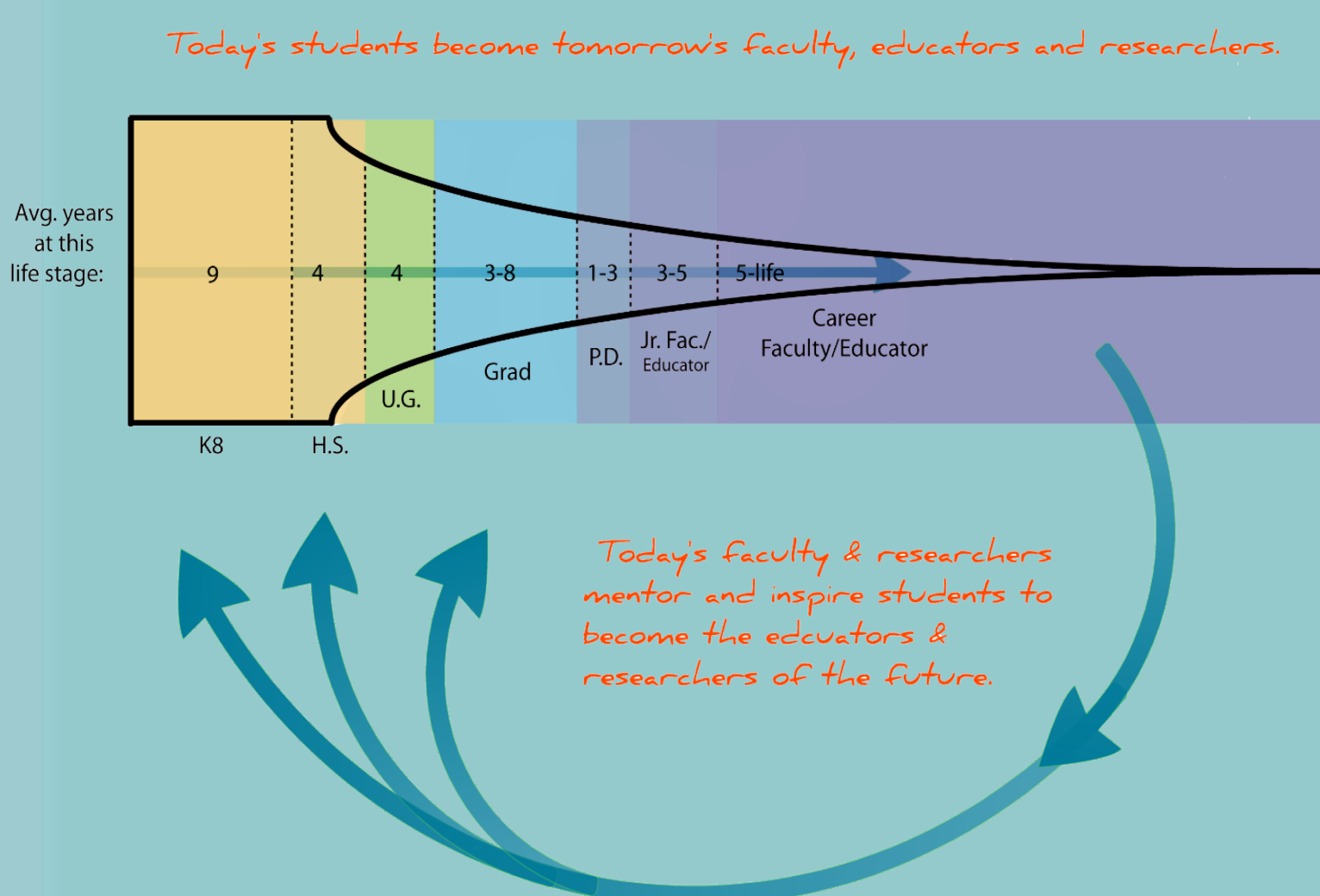
What is “broadening participation”?

➔ On the short term it refers to increasing the participation and success of underrepresented students in your program.



➔ On the long term it means fostering levels of representation in the STEM pipeline that more closely reflect the demographic diversity of the US population.

“The Pipeline”



The demographic composition of the pipeline tends towards self-repetition.

More than 75% of white and Asian students earn a high school diploma, in comparison to 56% of Latino, 54% of black, and 51% of American Indian students.

<http://www.ednews.org/09/09/06/03>

59% of white students complete a bachelor's degree within six years of enrolling in college, in comparison to 47% of Hispanic students, 40% of African Americans, and 39% of Native American students.

The Nat'l. Center for Public Policy & Higher Education
“Measuring Up 2008: the Nat'l. Report Card on Higher Ed.”
<http://measuringup2008.org/pdfs/NCPPHEDNationalRpt.pdf>

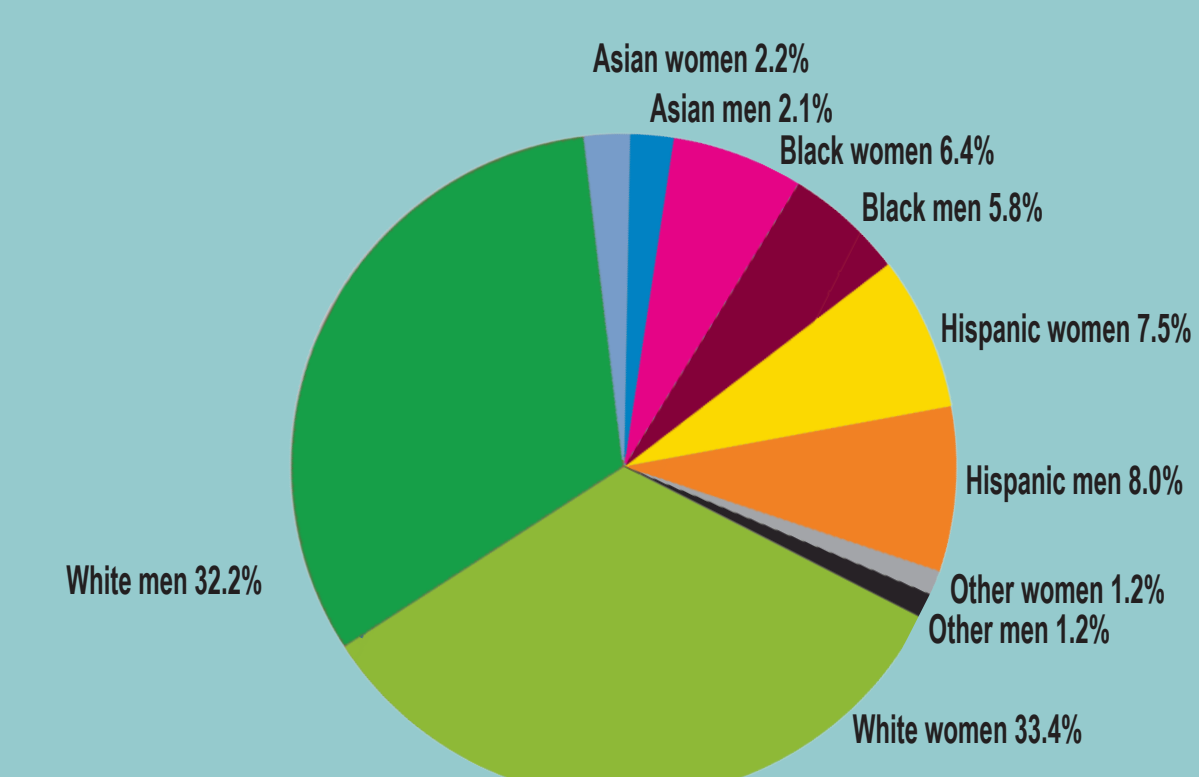
In 2008, women comprised only 20.6% of full-time, full professors with science and engineering doctorates (but 50.7% of the total US resident population).

Underrepresented minorities (African Americans, Hispanics, and American Indians/Alaskan Natives) comprised only 5.7% of full-time, full professors with science and engineering doctorates (but 30.1% of the US resident population).

The science and engineering workforce is composed of people who earned degrees over roughly three decades.

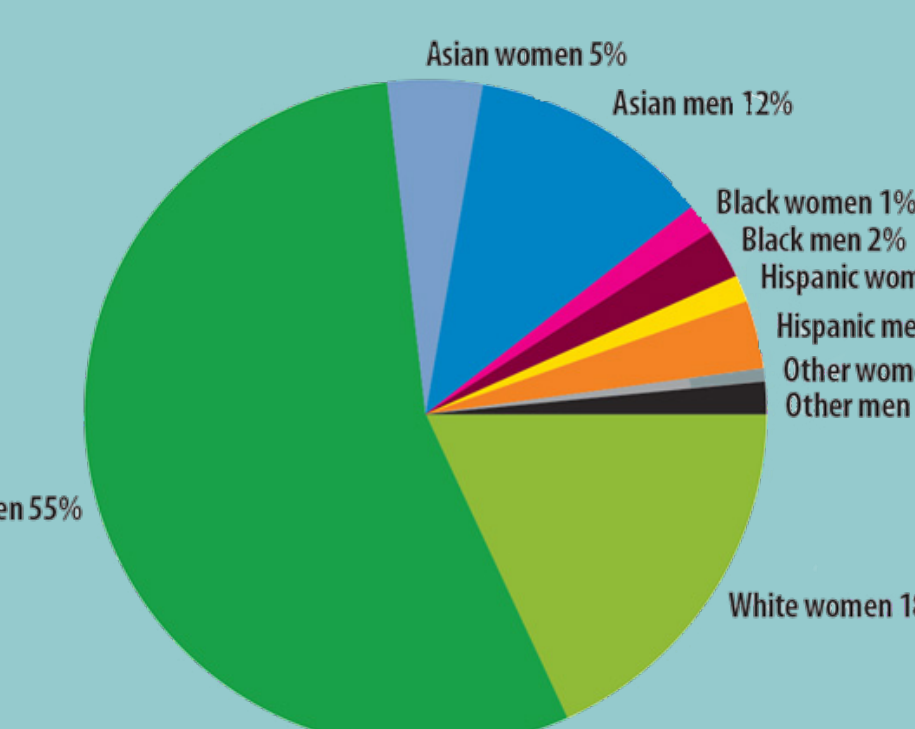
NSF, “Women, Minorities, and Persons with Disabilities in Science and Engineering: 2011,” <http://www.nsf.gov/statistics/wmpd/>

Resident population of the United States (2008)

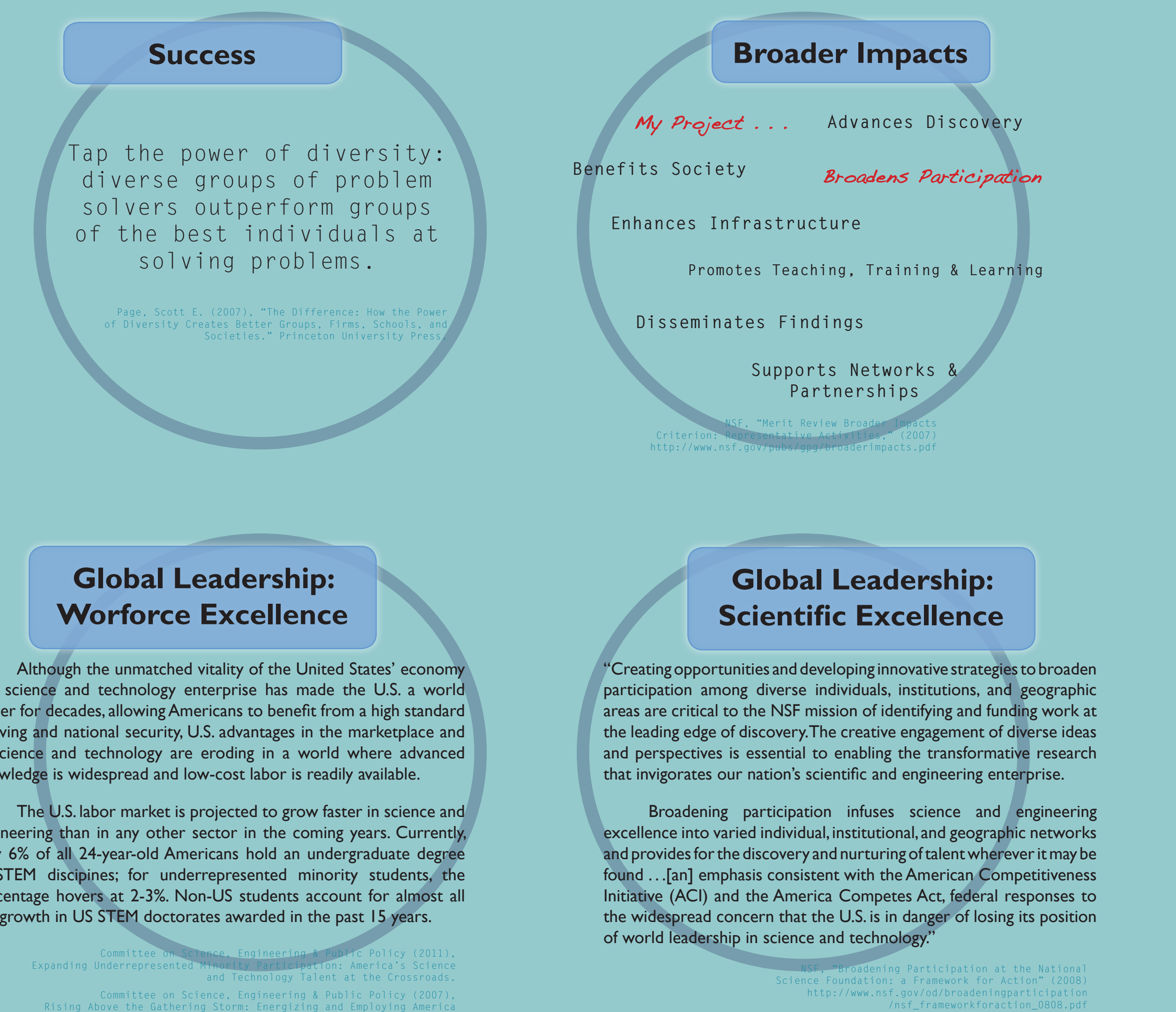


NOTE: Hispanic may be any race. Other includes American Indian/Alaskan Native, Native Hawaiian/Other Pacific Islander, and multiple race.
SOURCE: NSF, Women, Minorities, and Persons with Disabilities in Science and Engineering: 2011, at <http://www.nsf.gov/statistics/wmpd/>

Scientists & engineers in science and engineering occupations (2006)



Why does broadening participation & increasing diversity matter?



How do I broaden participation and increase diversity in my program?

A. Grow the diversity awareness and cultural competency of project faculty and partners.

- ☐ Get faculty on board: why does diversity matter to them?
- ☐ Offer and implement training /orientation
- ☐ Provide access to materials and resources that support faculty in their efforts

B. Develop and implement a comprehensive plan for outreach and student support that covers:

- ☐ Outreach & recruitment
- ☐ Support & retention (pre-, during, & post-program)
- ☐ Tracking & evaluation

C. Embrace the pipeline.

Embracing the pipeline involves far-thinking in a system built around supporting and assessing results on the (relatively) short-term. But persist! Reaching backward and forward in the pipeline is critical to creating deep and lasting change, and – fortunately! – including just a few concrete activities focused on this end can make a difference.

- ☐ INSPIRE backwards and outwards: reach out to young students in K12 and bring your science back to community and family.
- ☐ SUPPORT forwards: help students continue on a successful career pathway and transition into grad school, the post-doc experience, and the junior faculty or early professional stages of their academic, research or industrial careers.

D. Evaluation: put the systems into place that enable you to track your efforts and assess change.

E. Dissemination: share your work, findings and successes at conferences and in publications.

Visit www.pathwaystoscience.org/oceanscience.asp

Download checklists, templates & handouts with details & examples of on-the-ground project components and activities.

Access resources:
The Online Diversity Reference Library
The Online Mentoring Manual

Post your opportunity for students.

Questions?
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