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Celebrate Diversity with **elevate**science

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Celebrate Diversity!

The Culturally Responsive Classroom

As a teacher, you regularly encounter students who are ethnically, culturally, and linguistically diverse, with a range in skills, physical abilities, and living circumstances that impact learning in the classroom. It's important to keep in mind these factors of diversity are not mutually exclusive and that students often represent several populations.

This rich diversity is both a great opportunity and a challenge. All students bring a unique set of experiences and outlooks that should be honored and celebrated to help them achieve their full potential in science and engineering. You can take the following steps to ensure a rich and engaging science classroom that is inclusive, supportive, and elevates all students.



Steps You Can Take as A Teacher

1 Maintain Appropriate Physical Resources

Your classroom set-up is an important part of ensuring equity. Do students have access to up-to-date and relevant science lab and engineering equipment and technology resources, including computers and appropriate hardware? This includes spaces that allow students to carry out science and engineering tasks safely. Provide access to a variety of hands-on materials and teach students to always follow appropriate lab procedures.

2 Check for Unconscious Bias Everyone has ideas and ways of speaking that can inadvertently express bias. And students can be very sensitive to a teacher's behavior. So, unconscious bias may be hurtful despite the best intentions. For example, a teacher may assume boys will want to do certain activities and girls will want to do others. Or notice misbehavior among students of one ethnic group more often than he or she notices it among others. Or a teacher may call on certain students more than others. You should consider whether unconscious bias may be guiding those decisions each time.

3 Create a Culture of Inclusion When you set up your classroom, there is an opportunity to help every student feel welcome. Consider the pictures hung on the wall: are there students of many ethnic and racial groups represented? Are there students with disabilities, students with various sexual identities? Think about the classroom library: does it have books on topics that will engage students with many different interests and from different backgrounds?

4 Make Space for Student Voice and Viewpoints

If students feel safe, they will participate freely in class and small group discussions. Many labs and engineering design activities ask students to provide feedback for other groups. Be sure that all groups of students provide feedback. Help nudge students who may not view their own feedback as valuable.

Similarly, many of the engineering design activities ask students to judge whether communities should embrace certain engineering design solutions. All students can have an opinion, regardless of their background. In fact, the diversity they reflect will add more points of view and therefore, a much richer conversation.

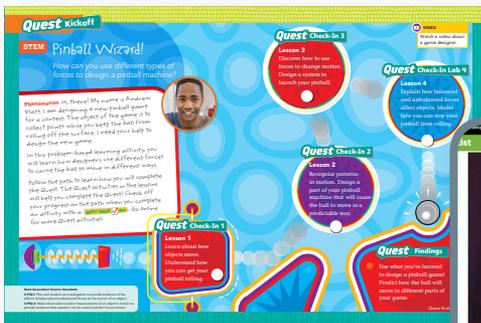
The Diverse Classroom

People representing many cultures and ethnicities have historically been underrepresented in STEM careers. Students who see others like themselves can imagine that they, too, can become scientists and engineers.

It is important to provide fair, accurate, inclusive and respectful representation and contributions of people from different demographics. Many of the *Elevate Science* resources support people and groups who made important contributions to society through science and technology from a variety of different demographic groups, including Native Americans, African Americans, Mexican Americans and other Latino groups, Asian Americans, Pacific Islanders, European Americans persons with disabilities, women, and members of other ethnic and cultural groups.

Throughout *Elevate Science*, students see a diversity of both students and adults in scientific and engineering roles.

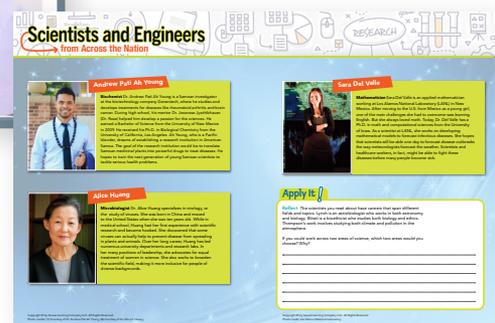
- The Quest Project-Based Learnings include representatives of diverse people as scientists and engineers solving local and relevant problems.
- A rich assortment of biographies, in print and online, reflect a diverse population of scientists and engineers.
- The Quest Challenges provide opportunities for students to apply science concepts to research and solve problems in their local community.
- Digital videos and inter-activities connect students to STEM Career professionals from a variety of cultural backgrounds.
- Celebrating Diversity Career Cards (see examples on the following pages)



Quest PBL



Career Video



Career Card

Learn more about Savvas Learning Company's response to Culturally Responsive Learning.
[Savvas.com/CulturallyResponsiveLearning](https://www.savvas.com/CulturallyResponsiveLearning)

Scientists and Engineers

from Across the Nation

Stephen Jay Gould



Paleontologist Dr. Stephen Jay Gould was a paleontologist who studied life of the distant past. Dr. Gould changed the way scientists view the fossil record. He came up with the concept of punctuated equilibrium. Gould argued that new species emerge quickly and then stay stable for millions of years. He also argued that human evolution looks more like a branching bush instead of a ladder. Gould proposed that evolution could be used to explain human behaviors such as aggression and selflessness.

Selenne Bañuelos



Mathematician Dr. Selenne Bañuelos is a professor at California State University, Channel Islands. She teaches math and does research that uses math to study systems in biology. For example, she models human sleep cycles. Then, she uses math to investigate how changes in temperature affect our sleep. Dr. Bañuelos grew up in East Los Angeles. Her parents came from Mexico. They did not go to high school. Her parents told her about the importance of education and supported her efforts. Dr. Bañuelos works to help other students like her to go to college for fields in STEM.



Dawn Wright



Geographer Geographers study landforms, natural environments, and their inhabitants. Dr. Dawn Wright specifically studies the geography of the ocean floor. She is a professor at Oregon State University and chief scientist of a big mapping company in Redlands, California. Known as “Deepsea Dawn”, Wright has explored some of the most geologically active areas on Earth including the Juan de Fuca Ridge and volcanoes under the Indian Ocean. She was the first African American woman to ride in the deep submersible ALVIN to the ocean floor. She also plays a key role in developing three-dimensional maps of the ocean floor.

Apply It!

Reflect Many scientists engage in argument from evidence to construct their own work.

How do you think each of these scientists engaged in argument from evidence to help develop their own ideas?

Scientists and Engineers

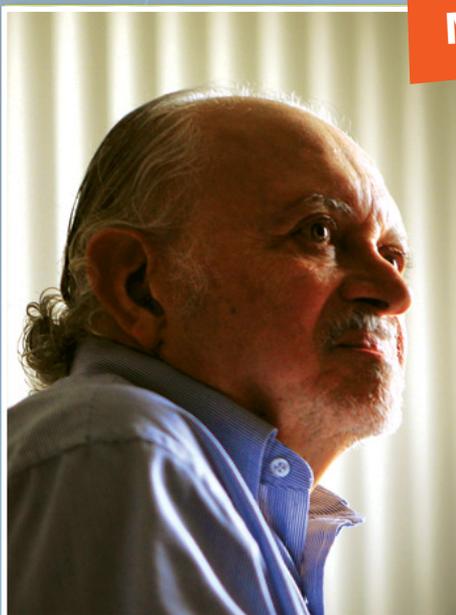
from Across the Nation

Jennifer Doudna



Biochemist Jennifer Doudna spent most of her childhood in Hilo, Hawaii. Exploring the rain forests there awakened an interest in science that has lasted throughout her life. Doudna works at the University of California, Berkeley, where she studies how bacterial RNA fights viruses. Building on this research, she was part of a team that invented CRISPR technology. CRISPR is a gene-editing tool that uses RNA and a specific enzyme to alter DNA in living cells in very specific ways. Scientists around the world now use the technology as they research treatments for genetic diseases such as sickle cell disease and cancer.

Mario Molina



Chemist From early on in Mario Molina's childhood in Mexico City, he knew he wanted to be a chemist. His aunt, who was a chemist, even helped him conduct experiments in a bathroom in his family's home. Many years later, while working in California in 1974, he discovered that chemicals called chlorofluorocarbons (CFCs) broke down ozone molecules in the atmosphere. CFCs were used in aerosol sprays and cooling devices, such as refrigerators. The ozone layer protects Earth from ultraviolet radiation from the sun. If the use of CFCs continued, he and his colleagues warned, the ozone layer would be destroyed. Since his discovery, which earned him a Nobel Prize, the use of CFCs has declined and the decrease of ozone in the atmosphere has slowed down.



Andrea Kealoha



Oceanographer As a Native Hawaiian, my love for the ocean was fostered in childhood, when I learned to surf, fish, and dive. After receiving a Bachelor's in Global Environmental Science, I went on to earn a Master's degree in Marine Science. Currently, I am a Ph.D. candidate in Oceanography at Texas A&M University. I study the impacts of global climate change to coral reef health. I sail around the world to research some of the world's most beautiful and remote coral reefs, including those in the Pacific Ocean and the Gulf of Mexico. After I complete my Ph.D., I hope to continue my research of coral reefs by working for the National Oceanic and Atmospheric Administration (NOAA).

Apply It !

Reflect Scientists can have a big impact on other people and the world they live in. They can sometimes help to change the way people think about the world around them.

How is the work of the three featured scientists related? How has each scientist helped to show people something important?

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