



Pre-College Engineering Education precollege.asee.org

INCLUSIVE ENGINEERING FOR P12 STUDENTS: BEST PRACTICES

COLLABORATION VS. COMPETITION

Competitions can be exciting ways to get students to do their best. However, they may discourage students who don't win. Some competition can be good, but make sure to have opportunities for classes and teams to collaborate and show that everyone's success is valued and important.

CONTEXT MATTERS

Choosing authentic contexts that demonstrate how engineering solutions help society, people, animals, etc., can motivate engagement and help students identify their goals and values within engineering.

CULTURALLY RELEVANT

When considering the context of an engineering activity, think about the target students' interests, the characteristics of their community, and the things they are familiar with, and integrate them into your activity.

DESIGN, PLAN, THEN BUILD

Some students prefer to think before they build while others want to jump in and start constructing. Encourage good engineering practices by having all students design and plan before allowing them access to materials.

TEAMING

Team composition can play a huge role in student engagement. Research shows that putting underrepresented individuals in the minority within a team can be disempowering. Try to create teams where students are equally represented.

UNIVERSAL DESIGN FOR LEARNING

Not everyone learns in the same ways. Utilize principles of Universal Design for Learning:

1. Provide multiple means of representation,
2. Provide multiple means of expression,
3. Provide multiple means for engagement.

Read more at www.cast.org

ROLE MODELS

Role models and mentors who share attributes with students can make a big difference in helping students imagine themselves as an engineer. YouTube clips or profiles of diverse engineers from the internet may help when your staffs' profiles don't match the students.

INCLUSIVE ENGINEERING FOR P12 STUDENTS: RESOURCES



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ROLE MODELS

Credit: Jessica Black



HERBIE HANCOCK

Jazz Musician
Electrical Engineer

Credit: Laura A. Oda



DEBBIE STERLING

Goldilocks Founder
Design Engineer

Credit: NASA



JOHN HERRINGTON

1st Native American astronaut
Aeronautical Engineer

Credit: ESPN



ALBA COLÓN

Lead Engineer - Chevy NASCAR
Mechanical Engineer

Credit: Xerox



URSULA BURNS

CEO Xerox
Mechanical Engineer

Credit: Mike McGregor



LONNIE JOHNSON

Super Soaker inventor
Mech./Nuc. Engineer

LINKS

National Society of Black Engineers: nsbe.org

Society of Women Engineers: societyofwomenengineers.swe.org

Society of Hispanic Professional Engineers: shpe.org

American Indian Science and Engineering Society: aises.org

National Organization of Gay and Lesbian Scientists and
Technical Professionals: noglstp.org