

LOOKING FOR MORE ACTIVITIES?

The Society of Women Engineers' **ASPIRE** K-12 outreach website has activities appropriate for middle and high school ages. Go to <http://aspire.swe.org> Then click on Educators—Teaching Resources—Outreach Resources by Grade Level

Examples:

- Student teams construct a suspension bridge that will support a 5 pound weight, using 6 chairs, 50 feet of clothesline, string, and a cardboard deck.
- To explore aeronautical engineering, students build a shoe-box wind tunnel and build and test 2 glider variations.
- Students explore how engineers can make a difference in their communities when they design a paraplegic equestrian saddle.

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The **Engineering: Go For It** website from ASEE offers a variety of classroom hands-on engineering activities for all grade levels.

- See especially the chocolate-chip cookie mining activity for younger students, which introduces the concepts of economics and environmental constraints to an engineering project: <http://teachers.egfi-k12.org/cookie-mining/>

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The **Try Engineering** website has international editions (Spanish, German, French, Arabic, and more): <http://www.tryengineering.org/>. The site's Lesson Plan section has a database searchable by category and age for hands-on activities. Some examples:

- Students become electrical engineers and build a working circuit with just a battery and a bulb, then add a switch from a discarded toy: <http://www.tryengineering.org/lessons/elecswitch.pdf>
- Students use everyday materials (Rubber bands, toothpicks, plastic wrap, popsicle sticks, shredded wheat, etc.) to explore how engineers develop systems to contain and clean up an oil spill: <http://www.tryengineering.org/lessons/spillsolutions.pdf>
- Teams of students use the engineering design process to construct surgical instruments from everyday materials (marshmallows, chop sticks, grapes, dominoes, etc.). They then test their instruments to determine how well they can perform a simulated "surgical procedure": <http://www.tryengineering.org/lessons/smoothoperator.pdf>

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The **Engineers Week** website is a treasure-trove of hands-on activities.

- Popular activities in extended versions for middle and high school, and ZOOM Into Engineering activities for ages 6-12. This page links to an international section with translations of activities into ten languages. <http://www.eweek.org/EngineersWeek/DiscoverE.aspx?ContentID=182>
- Archived activities from 1998 and earlier, by grade level, thanks to the EWeek committee in Austin, Texas. Remember Newton's Apple, the Dome Home, Magnetic Personalities, Slinky Science – and more? <http://www.eweek.org/EngineersWeek/DiscoverE.aspx?ContentID=91>
- Archive of more recent activities: the Mousetrap-powered car, Lemon Battery Challenge, Radioactive Ping-pong balls, and more: <http://www.eweek.org/EngineersWeek/DiscoverE.aspx?ContentID=90>
- Eight simple experiments from a Brownie Troop: http://www.eweek.org/site/News/Eweek/girls_day_tryit.shtml
- Short and simple BOOKMARK activities: <http://www.eweek.org/site/Library/bkmrkindex.shtml>

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And don't forget these engineering activity sources.



For Pre-Schoolers

SID THE

SCIENCE KID:

<http://www.pbs.org/parents/sid/>

For Elementary School Ages

CYBERCHASE:

<http://www.pbs.org/parents/cyberchase/lessons/index.html>

For Middle/High School

DESIGN SQUAD NATION:

<http://pbskids.org/designsquad/parentseducators/index.html>

DISCOVER ENGINEERING

- For middle school students, with videos showcasing real students learning and doing engineering, with accompanying classroom activities.

<http://www.discoverengineering.org>

READY, SET, GO!

ENGINEERING YOUR FUTURE

After working through an activity with a class, adult leaders can encourage students to consider engineering as a career option.

Getting from pre-college to cool STEM career.

1. **Ask questions** when you don't understand something
2. **Talk to your teachers**, counselor, and parents about the courses you should take.
3. **Get to class** on time and turn in your best work.
4. **Join clubs** to learn about STEM careers (SkillsUSA, TSA, FIRST Robotics, etc.).
5. **Volunteer** to make a world of difference in service clubs, church, community.
6. **Explore** college guides.
7. **Sign up** for tests needed for college applications.
8. **Get real**-world STEM experience through internships, summer jobs, part time jobs.
9. **Be an engineer!**

From the National Action Council for Minorities in Engineering.
See more at www.nacmebacksme.org

NACME is a member of the National Engineers Week Foundation Diversity Council



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www.discoverengineering.org