

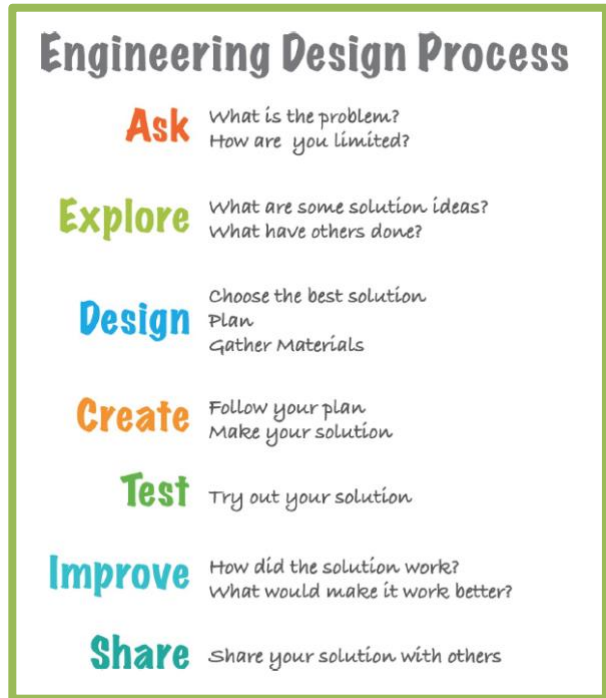
Design Your World Using STEM!

Families who design together create fun oo-ah moments together!

Spark your innovative spirit! Use STEM (science, technology, engineering and math) to create purposeful and relevant designs that help solve problems.

Design Challenges

Which challenge would you like to solve? Draw and describe your design on paper. Make a 3D model with materials you find where you live. Have an Engineering Showcase to share your design with family, friends, or classmates in your home or on a virtual call.



<p style="text-align: center;">Design Challenge 1</p> <p style="text-align: center;">Make a product that moves and makes sound.</p>	<p style="text-align: center;">Design Challenge 2</p> <p style="text-align: center;">Make a product that travels through the air for a long distance.</p>	<p style="text-align: center;">Design Challenge 3</p> <p style="text-align: center;">Make a bee model that can pollinate a flower.</p>
<p style="text-align: center;">Design Challenge 4</p> <p style="text-align: center;">Make a ramp to have a marble roll the longest distance.</p>	<p style="text-align: center;">Design Challenge 5</p> <p style="text-align: center;">Make a structure that does not collapse in an earthquake.</p>	<p style="text-align: center;">Design Challenge 6</p> <p style="text-align: center;">Make different bird beaks that can pick up small seeds, large seeds, crack open a shell, catch a fish, or catch an insect.</p>

Reto de diseño

<p style="text-align: center;">Reto de diseño 1</p> <p style="text-align: center;">Haz un producto que se mueva y produzca sonido.</p>	<p style="text-align: center;">Reto de diseño 2</p> <p style="text-align: center;">Haz un producto que viaje por el aire a larga distancia.</p>	<p style="text-align: center;">Reto de diseño 3</p> <p style="text-align: center;">Haz un modelo de abeja que pueda polinizar una flor.</p>
<p style="text-align: center;">Reto de diseño 4</p> <p style="text-align: center;">Haz una rampa para que un mármol ruede la distancia más larga.</p>	<p style="text-align: center;">Reto de diseño 5</p> <p style="text-align: center;">Haz una estructura que no se derrumbe en un terremoto.</p>	<p style="text-align: center;">Reto de diseño 6</p> <p style="text-align: center;">Haz diferentes picos de pájaros que puedan recoger semillas pequeñas, semillas grandes, abrir una concha, atrapar un pez o atrapar un insecto.</p>

More Engineering Design Challenges

For any of these activities you can substitute materials other than the ones suggested to design your product.

- **Musical instrument:** Build using simple materials. <https://pbskids.org/designsquad/build/build-instrument/>
- **Straw bridge:** Design and build using pennies as weights.
English https://www.teachengineering.org/activities/view/cub_strawbridges_sprinkle
Spanish: https://www.teachengineering.org/sprinkles/view/cub_strawbridges_spanish_sprinkle
- **COVID-19 virus:** Build using the suggested design. <https://www.exploratorium.edu/snacks/viral-packaging>
- **Catapult:** Design and build using glue, adhesive, or a glue gun.
English-https://www.teachengineering.org/sprinkles/view/cub_catapult
Spanish-https://www.teachengineering.org/sprinkles/view/catapult_spanish
- **Paper airplanes:** Design different “Fold n’Fly” planes for speed, acrobatics, and gliding.
<https://www.foldnfly.com/>
- **Paper helicopter:** [Science Activity: Make a Mini-Helicopter From Paper!](#) OR [NASA Roto-Motor design project](#): Design and test helicopters with propellor sizes and weights. Connect design to seeds: [Why do some plants make seeds that move like helicopters?](#)
NASA version: https://www.nasa.gov/pdf/205711main_Rotor_Motor.pdf
- **Earthquake-proof structure:** Design a structure that won’t collapse when the earth shakes.
<https://www.exploratorium.edu/snacks/shaky-sediments>

Website Collections of Design Challenges

- **Try Engineering** <https://tryengineering.org/students> (translated into multiple languages)
- **PBS Kids Design Squad** www.pbskids.org/designsquad
- **Teaching Engineering** (CU-Boulder)
<https://www.teachengineering.org/curriculum/browse?collection=Sprinkles>
- **Cyberchase Science and Engineering games** <https://pbskids.org/cyberchase/topics/science-engineering>

Website for Young Engineers

- **Sesame Street STEM: Little Discoverers** <https://www.sesamestreet.org/toolkits/stem>
- **The Cat in the Hat Engineering Games** <https://pbskids.org/catinthehat/games/>

Videos and Photo Examples of Cool Engineering Designs

- **Zoom Engineering:** Watch kids creating innovative designs to problems
<https://rmpbs.pbslearningmedia.org/collection/zoom-engineering/>
- **Why did the Tacoma Narrows Bridge collapse in 1940?**
[Video](#) of the collapse. <https://www.youtube.com/watch?v=j-zczJXSxnw>
[Video](#) explaining the physics and engineering reasons for the collapse.
<https://www.youtube.com/watch?v=mXTSnZgrfxM>
- **Exploratorium Real World Problems and Solutions** <https://www.exploratorium.edu/explore/real-world-problems-and-solutions>
- **Exploratorium Design and Tinkering** <https://www.exploratorium.edu/explore/design-and-tinkering>

These and more at <http://csencolorado.org/> Family and Caregiver Investigations.