# What is Technology? Hands-On Technology

Overview: Kids will discuss the definition of technology and engineer a solution to solve a problem.

Note to Educator: Many people think of technologies only as things that are electronic or things that are "high-tech." Technology is actually anything designed by humans to help solve a problem. Find alternate versions of this activity at www.engineeringadventures.org/resources.
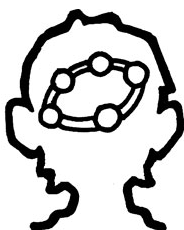
Duo Update (5 min)
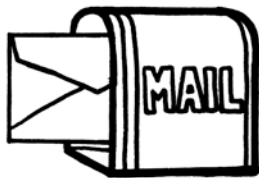
Set the Stage (10 min)
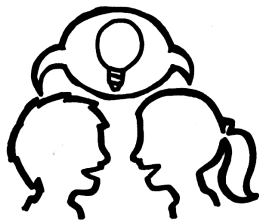
Activity (25 min)

Reflect (5 min)

Materials

For the entire group:
- ☐ *Message from the Duo*, track 2 or Engineering Journal, p. 5
- ☐ *Engineering Design Process* poster

Materials Table:
- ☐ 1 roll of paper towels
- ☐ 1 tablespoon measure
- ☐ 1 tablespoon of sand
- ☐ 2 aluminum trays, 12" X 10"
- ☐ 2 sheets of green foam
- ☐ 2 stuffed animals

- ☐ 4 deli containers, 16 oz.
- ☐ 4 rolls of masking tape
- ☐ 8 pens or pencils
- ☐ 50 straws
- ☐ optional: 1 roll of duct tape

For each group of 3 kids:
- ☐ 1 pair of scissors
- ☐ 1 ruler
- ☐ 50 index cards

For each kid:
- ☐ Engineering Journal

Preparation

Time Required: 20 minutes
1. Post the *Engineering Design Process* poster.
2. Have the *Message from the Duo* ready to share.
3. Fill 2 deli containers with water.
4. Set up the remaining materials at the Materials Table.
5. Measure out 15 feet of testing space for the group(s) who choose the *Send a Message* problem.
6. Create 2 model plants out of green craft foam. See p. 10 in this guide for an example. Place each model plant in an empty deli container. Tape the model plants down.
7. Optional: Preview a video about life on the ISS to share with kids before *Set the Stage*.

Journal Pages for Prep Adventure 2

Message from the Duo, p. 5

reply | forward | archive | delete

from: engineeringadventures@mos.org
to: You
subject: What is Technology?   11:23 AM

Hi engineers,

You did a great job engineering a tower to display the stuffed animal so lots of people could see it! Now you're ready to help us engineer even more technologies.

Do you know that the things engineers design to solve problems are called technologies? Most people think technologies have to be electronic, but this isn't true. A technology is actually anything engineered by a person that solves a problem.

Think about an airplane as an example. An airplane is a technology because people engineered it and it solves the problem of needing to travel long distances quickly. But something as simple as a paper cup is also a technology. A person engineered it, and it helps people hold drinks without spilling them everywhere.

We have some more challenges for you today. Can you use the Engineering Design Process to engineer technologies to solve the problems we sent?

Good luck!

India and Jacob

Imagine — Plan — Create — Improve — Ask — The Goal

Engineer It, p. 6

Which Problem Will You Help Solve?

Send a message	Water a plant
The space shuttle commander needs to send a message to an astronaut floating 15 feet away.	An astronaut needs to move water from a container to a plant on the International Space Station (ISS).
Carry pens and pencils	Protect an astronaut
An aerospace technician needs to carry pens and pencils across the spacecraft.	An astronaut needs to be protected from a dust storm on Mars.

You're an engineer!
What can you engineer to solve this problem?

Reflect: Think about what you designed . . .

Did a person engineer it?
☐ Yes   ☐ No

Does it help you solve a problem?
☐ Yes   ☐ No

If you answered YES to both questions, it is a technology!

Model Plant Example

Kids will learn:
- Technology is anything designed by humans to help solve a problem.
- Engineers are people who design and *improve* technologies.

Present the Message from the Duo (5 min)

1. Tell kids that India and Jacob sent them a message with more information about what engineers do. Have kids turn to *Message from the Duo*, p. 5 in their Engineering Journals, to see the message. Play track 2.
2. To check for understanding, ask:
   - **India and Jacob told us that a technology is anything designed by people to solve a problem. What are some technologies you can think of?** *Accept all answers.*
3. Give kids 1 minute to list examples of technologies. If kids name only electronic items, remind them that India and Jacob mentioned that things like paper cups are also technologies.
4. To check further understanding of the definition of technology, ask:
   - **Can you find anything that is not a technology?** *Encourage kids to look around the room or out the windows to see if they can find anything that is not a technology. If kids see rocks, trees, soil, or any natural materials, then they have found something that is not a technology.*

Set the Stage (10 min)

1. Explain to kids that now they get the chance to *create* technologies to solve specific problems. These challenges are (1) send a message, (2) water a plant, (3) carry pens and pencils, and (4) protect an astronaut.

   > **Tip:** Problems #1 and #2 are the most difficult. Problem #3 is the easiest.

2. Have kids turn to *Engineer It*, p. 6 in their Engineering Journals, to read the descriptions of the 4 problems, or read them aloud.
3. Let groups know that they will have 5 minutes to *imagine* and *plan*, then 20 minutes to *create* and test a technology to solve the problem. Then, groups will share their technology with the whole group.

   > **Tip:** If groups have many ideas, they can *create* and test more than one technology and choose one to share with the group.

4. Explain that each group will have 50 index cards, straws, and tape to make their technologies. Scissors and rulers will also be available to use as tools, but cannot be used in their designs.
5. Let groups know they should test their designs as they *create* to determine if their technologies solve their problems. Groups that have the *Protect an Astronaut* problem should test by sprinkling sand over their design placed in the aluminum tray and then checking to see if the stuffed animal was protected from the sand.

Hands-On Technology (25 min)

1. Organize kids into groups of 3.
2. Assign 1 problem to each group to ensure each problem is chosen, or have groups choose. Have kids circle the problem they will solve in their journals.
3. Give groups about 5 minutes to brainstorm as many technologies as they can to solve their problem. Groups can use the middle box on *Engineer It*, p. 6 in their Engineering Journals, to draw or write their ideas. If groups are having trouble coming up with ideas, ask:
   - **What already exists that would help solve this problem?**

   Tip: You may choose to offer unlimited tape or to challenge groups by limiting the tape to 1 or 2 feet.

4. When groups have had a few minutes to *plan*, allow them to collect their materials from the Materials Table and spend 20 minutes designing and testing their technologies. As groups are working, circulate around the room and ask questions like:
   - **How are you using the materials to make technologies that solve your problem?**
   - **Are your designs working like you thought they would?**
   - **What other materials might help you solve this problem?**
5. Let groups know when 15, 10, and 5 minutes are left. Make sure all groups have tested their designs.

Reflect (5 min)

1. Have groups choose 1 of their technologies to share. Ask each group:
   - **What problem was your technology designed to solve?**
   - **Can you tell us about your design?**
   - **How might you *improve* your technology?**
2. Then, have kids look at the bottom of *Engineer It*, p. 6 in their Engineering Journals, and check the boxes that apply to all the designs they just made. Ask:
   - **Were all the designs you made technologies? Why or why not?**
     Yes, because we engineered them and they help solve a problem.
   - **Who designs technologies?** *Engineers*.
   - **Are you an engineer?** *Yes!*
3. Remind kids of the definition of technology that India and Jacob sent: a technology is anything engineered by a person that solves a problem.
4. Tell kids that in this unit they will be working in groups to engineer technologies that help astronauts solve problems in space.

reply   forward   archive   delete

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