Educator Guide

Science Activity 1: Technology Stories: Sharing Experiences

Educator Preview

Activity Snapshot

Learners share experiences with, and stories about, technology.

Timing | 45 minutes

Get Ready & Team Up	10 min.
Storytelling	25 min.
Reflect	10 min.
Total	**45 min.**

Level Up Activities 5–60 min. each

Prep Snapshot*

Prep Time **30 min.**

Set up a Materials Table.

**See Materials & Preparation for full info.*

21st Century Skills

Connection

- Communication

Science Practice

- Obtaining, Evaluating, and Communicating Information

Guiding Question

Why is technology important?

Learners Will Do

Share a story or experience about technology.

Learners Will Know

Humans design technologies to solve problems they have identified

Connecting Across Activities

Ready, S.E.T., Go!	Activity 1: Sharing Experiences	Activity 2: Introducing Landforms
Last time, learners designed spacecraft to gather data about Mars. As scientists, they chose a mission. As engineers, they figured out which instruments to send on the mission.	**Today**, learners share experiences with, and stories about, technology.	**Next time**, learners generate questions about Mars before they explore how wind and water can make landforms on a planet's surface using models.

Activity Resources

Access videos and digital resources using the link or QR code below. More information for teaching this curriculum is available in the Educator Guide Introduction, pgs. iii-xxvi. Access more PLANETS units, research, and pathways at https://planets-stem.org/.

QR Code for Activity Resources

weblink: https://hov.to/699f13d4

Materials and Preparation

Materials

For the educator

- *Our Ideas* poster (on paper or a shared digital document) in Prep & Setup Guide (PDF) Examples | Templates
  - index cards
  - markers
  - scissors
  - tape

For the Materials Table

- drawing supplies (such as pencils, crayons, markers)
- building supplies your site has access to (such as clay, Lego bricks, beads, natural materials).

For each learner

- Science Notebook

Activity 1 Materials Preparation (30 min.)

Ahead of Time

1. Prepare an *Our Ideas* poster by following the Prep & Setup Guide (PDF). Add the Guiding Question "Why is technology important?" so learners can refer to it throughout the activity.

Teaching Tip

This activity is the same in both the Science and Engineering Pathways. If you have already taught it in one pathway, you do not need to teach it again.

2. Learn about local industries and traditions, reasons why they are important in local communities and cultures, and their history in your area. This information will help you understand learners' stories, and you can use it to provide examples and prompt learners' thinking.
3. Learn about or reflect on the storytelling styles of learners' communities. Think about the kinds of stories learners might tell and how you can structure the activity to support them.

In Your Space

4. Place the *Our Ideas* poster in a location all learners can access. Make a plan to store it between activities.
5. Set up a Materials Table with the materials listed in the Materials section.
6. Optional: Set the mood for the activity by playing music.

Get Ready & Team Up (10 min.)

1. Ask: **If you did the last activity, what did you do and why?** (*As scientists, we chose a kind of mission to send to Mars. As engineers, we designed a spacecraft to complete that mission.)*
2. Say: **Our ultimate goal is to choose a site on Mars to land a rover. We will use various technologies to learn about Mars. To start our exploration, we're going to share what we know about why technology is important. Remember that a technology is anything designed by people to solve a problem.** Share the Guiding Question with learners aloud and in writing (using multiple languages as needed): **Why is technology important?**
3. Organize learners into groups of four.

Support Learner Differences

If learners are new to you or each other, have them share their names, name pronunciations, and other important parts of their identities. These introductions are important for all learners and can be especially relevant for Indigenous learners, multilingual learners, and learners with different physical abilities. You can also distribute index cards and have learners write anything they want you to know but do not want to share with the whole group, such as resources that will help them learn. Lead an inclusion activity that is appropriate for your group (a list of possible activities is available on pgs. xx-xxi). This tip is repeated because you may have new learners joining you in this and future sessions. Whenever you have new learners, repeat this strategy.

For more strategies to engage learners, refer to Designing Instruction to Reach Diverse Learners, pg. xv.

If you have learners who speak multiple languages, consider pairing learners with the same preferred language so they can share with each other in that language. Check out Intentional Grouping Strategies, pg. xxii.

If you have learners who speak multiple languages, have them discuss words for "technology" in their preferred languages and notice similarities between languages. If you can, provide an example from a language you know. Take time to learn learners' words and use them throughout the activities.

Storytelling (25 min.)

4. Say: **We all have stories. They can be stories we've heard from other people, stories we've watched or read about, or stories about things we have experienced ourselves. We experience stories every day in conversations, art, traditional craft, and online videos. Today, we're going to share stories about technologies or tools that made a big difference in our lives. These stories could be about technologies you use at home, technologies in history, what it means to use technology responsibly, and how technology affects different people in different ways.**
5. Have learners turn to *My Technology Story*, pg. 4 in the Science Notebook (PDF). Say: **To start, everyone will have 15 minutes to think about a story to tell that shows how a technology or tool has made a big difference in your life. Create some art that tells your story. You can write it down or write a poem that tells it, draw it, record it on a device, create a performance about it, or build something to demonstrate it.** Note that there are drawing and building materials on the Materials Table. During this time, check in with each group. If learners are struggling, consider sharing your own short story about technology to spark ideas.
6. After 15 minutes, say: **Now, everyone in your group will take a few minutes to share their stories. If your story is long, you can choose one or two minutes of it to share so there is time for everyone.**
7. Allow learners to share their stories for 10 minutes. Remind them to switch so that everyone has time to share. Visit each group and listen to learners' perspectives on technology.

Reflect (10 min.)

8. Say: **Thank you for sharing your stories. They gave us great reasons why technology is important.** Point out common themes you noticed among stories. Emphasize how technologies allow people to do things they could not do otherwise. Ask: **Is there anything else you want to share to answer the Guiding Question?** Revisit the Guiding Question: **Why is technology important?**

Support Thinking

Learners may want to make up their own stories. Bear in mind that the goal of the activity is to identify why technology is important to learners and communities they belong to, which made-up stories may or may not do.

Support Learner Differences

It is possible that stories about the use and effects of technology may bring up trauma. If you notice this, ask the learner privately what they might need at that moment. If they do not know, you can offer some ideas from the Arizona Adverse Childhood Experiences Consortium Resource Library.

In this activity, you will need to strike a balance between allowing learners to share complete stories and ensuring there is enough time for everyone to share. Different cultures have different conventions for storytelling, which may involve very long stories with many parts, the significance of which is not immediately apparent. Consider the best way to approach time management, which may involve dedicating multiple sessions to this activity.

You can use storytelling as an opportunity for learners to practice social skills such as taking turns and showing respect for other people's experiences.

9. Have learners record answers to the Guiding Question near it on the *Our Ideas* poster. You can
   - have each group designate a member to record responses on the *Our Ideas* poster.
   - have each learner write or draw something on a (physical or digital) index card and add it to the *Our Ideas* poster.

10. Say: **Next time, we will think about the ways land is shaped on the surface of Earth and Mars.**

After the Activity

1. Clean up:
   - Keep the *Our Ideas* poster for Activity 2.
   - If learners created objects related to their stories, save those objects for reference in future activities.
2. Have learners invite people from the community, including their families and friends, to save the date for the Science Share-Out in Activity 9.
3. Plan for Science Activity 2. See the Activity 2 Preparation on pg. 28.
4. Take time to reflect on the following educator prompt. **What strategies helped learners feel comfortable sharing stories?**

Remote Sensing Additional Resources

QR code leads to resources available for this unit.

weblink: https://hov.to/248cf0d9

Support Learner Differences

As needed, allow learners to choose other methods of sharing their ideas, such as audio recordings. Have them write the filename of each record on an index card and put the index cards on the *Our Ideas* poster. They will serve as placeholders. When necessary, you can ask, **"Who has the idea named X?"** and have the learner in question share the record.

Support Thinking

Learners may bring up ideas that will be relevant in future activities, such as technology that can gather information from far away. As appropriate, note that the group will return to these ideas.

Level Up!

- Check out some great examples of the more than 2,000 NASA spin-off technologies that enrich our lives thanks to space exploration. (5 min.)
- Get families or a community member involved to share relevant stories of engineering. Download customizable flyers and get ideas on the Remote Sensing Family and Community Connections (weblink). (45 min.)
- Tell learners, if anyone asks them what they did today, they can tell them "We shared stories about why technology is important." (5 min.)