







# Overview of Features and Teaching Supports in PLANETS Educator Guides

This infographic provides a visual tour of the PLANETS Educator Guides.

## Educator Guide: Front Matter

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Example of the Table of Contents from the Space Hazards Unit

 <p><b>Welcome to [the unit]!</b></p> <p>Introduction to unit objectives and PLANETS program overview.</p>	 <p><b>Unit Overview</b></p> <p>Comprehensive overview of the unit's Engineering and Science pathways.</p>	 <p><b>Connecting Across Science and Engineering</b></p> <p>An overview of the connections between the work of scientists and engineers that learners will see as they engage in the PLANETS curriculum.</p>
 <p><b>Educator Resources for Supporting Learning</b></p> <p>Several key resources to support inclusive teaching and learning. These include:</p> <ul style="list-style-type: none"> <li>• Explicit strategies for inclusive and equitable STEM learning, especially for:           <ul style="list-style-type: none"> <li>▪ Indigenous learners</li> <li>▪ Multilingual learners</li> <li>▪ Learners experiencing differing physical and/or sensory abilities</li> </ul> </li> <li>• Instructional Tips for Learning</li> <li>• Ideas for Inclusion Activities</li> <li>• Inclusive Grouping Strategies</li> <li>• Ideas for Building Family &amp; Community Connections</li> </ul>	 <p><b>Materials List</b></p> <p>A detailed list of all required materials for each pathway to plan ahead and ensure all necessary items are available.</p>	 <p><b>Advance Preparation</b></p> <p>Step-by-step instructions for setting up activities and experiments to streamline the preparation process.</p>

## Embedded Accessibility Features

### Screen Reader Compatibility

Youth-facing materials are designed to be fully compatible with screen readers, supporting blind and low vision learners.

### Translation-Enabled Content

Content can be translated into multiple languages, supporting emergent multilingual learners.

### QR Code Access

QR codes provide quick access to additional resources and youth-facing materials.

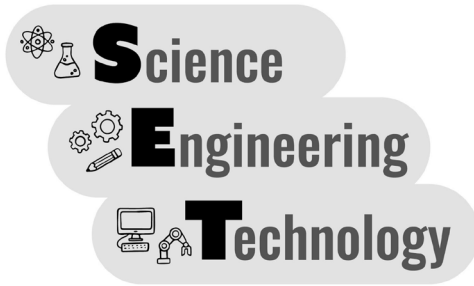
# Additional Supports in PLANETS Lessons

- PLANETS lessons in the Space Hazards unit are called adventures.
- PLANETS lessons in the Remote Sensing and Water in Extreme Environments units are called activities.
- Snapshots from all units are used to illustrate the supports available below.

Snapshots from the Water in Extreme Environments Unit

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Ready, S.E.T. (Science, Engineering, Technology), Go!



### Educator Preview

#### Activity Snapshot

Learners investigate water. As scientists, they figure out where water is located. As engineers, they design a technology to get the water.

<b>Timing</b>	<b>Prep Snapshot*</b>	<b>Skills, Habits, Practices</b>
Get Ready & Team Up 10 min	Space Need: Sink	<b>21st Century Skills</b>
Plan & Create (S.E.T.) 25 min	Prep Time 90 min	<b>Connection</b>
Reflect (Go!) 10 min	<ul style="list-style-type: none"> <li>• Read unit.</li> <li>• Print Notebooks.</li> <li>• Prepare containers.</li> <li>• Make <i>Our Ideas</i> poster.</li> </ul>	<ul style="list-style-type: none"> <li>• Critical Thinking</li> </ul>
<b>Total 45 min</b>		<b>Habits of Mind</b>
<b>Level Up Activities 5–30 min</b>		<ul style="list-style-type: none"> <li>• Use a structured problem-solving process.</li> </ul>
		<b>Science Practices</b>
		<ul style="list-style-type: none"> <li>• Planning and Conducting Investigations</li> </ul>

\*See *Materials & Preparation* for full info.

#### Guiding Question

How can we identify where there is water? How can we get it?

### Educator Preview

Each Adventure Snapshot breaks down the learning experience for you. You'll find:

- A quick look at what learners will do during their adventure
- The step-by-step flow and timing of activities
- A list of everything you need to gather and prepare
- The key skills learners will focus on throughout
- The guiding question that shapes each adventure

#### Learners Will Do

As scientists, identify which containers hold water. As engineers, design a way to get the water out.

#### Learners Will Know

Water is not always easily accessible, but humans can figure out where it is and engineer technologies to use it.

#### Connecting Across Activities

<b>Ready, S.E.T., Go!</b>	<b>Activity 1: Sharing Experiences</b>
<b>Today</b> , learners start exploring water. As scientists, they figure out where water is located. As engineers, they design a technology to get the water.	<b>Next time</b> , learners will share experiences with and stories about water.

### Framing the Learning

Each adventure opens with three key sections:

- **Learners Will Do:** All the hands-on activities and experiences they'll dive into
- **Learners Will Know:** The essential concepts they'll master along the way
- **Connecting Across Adventures:** How this learning builds on what came before and sets up what's ahead

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Materials and Preparation

Materials

For the whole group

- Ready, S.E.T., Go! comic
- blank poster or sheet of chart paper

Support Learner Differences



Learners using text-to-speech technology can access the comic slides.

- iOS or macOS users should enable text-to-speech or voice-over.
- Windows users should use JAWS or NVDA at [NV Access](#).

Be sure to read carefully and leave a visual shortcut to exit the program, or have your learner restore settings when they are done.

For each group of 4

- salt, 1/8 tsp per trial
- 1 piece of aluminum foil, 6" x 6"
- 1 aluminum tray, 12" x 10" x 2.5"
- 1 piece of cheesecloth, 6" x 6"
- 1 piece of craft foam, 4.25" x 5.5"
- 1 piece of felt, 4.25" x 5.5"
- 1 pack of index cards (about 100 cards)
- 1 piece of masking tape, at least 12"
- 2 rulers
- 4 washers
- 1 piece of dark-colored paper (optional)
- Step Cards, pre-cut, p. 13 (optional)
- Engineering Design Process Example, p. 15 (optional)

For each learner

- Notebook

Materials and Preparation

The Materials and Preparation section sets you up for success with:

- A clear list of everything you'll need to gather
- Materials organized by activity type:
  - Whole group supplies
  - Small group materials (for groups of 4)
  - Individual student materials
- Step-by-step instructions for preparing both printed resources and hands-on materials

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Ready, S.E.T., Go! Materials Preparation (70 min)

1. Read through the entire PLANETS Science Pathway Educator Guide to learn more about the science content in this unit.
2. Print and staple one Science Notebook for each learner, in color if possible.
3. Set up to display and share the Ready, S.E.T., Go! comic.
4. For each group, cut a 6" x 6" piece of aluminum foil, a 6" x 6" piece of cheesecloth, a 4.25" x 5.5" piece of craft foam, and a 4.25" x 5.5" piece of felt.

Pages for Ready, S.E.T., Go!

- Investigate It!, Notebook p. 2

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4. While groups are working, ask: **Do you have any of these landforms in your own community?** (*Accept all responses.*) **What do you notice about the shapes of different landforms when you observe them from above?** (*Accept all responses. Possible responses include snakes, rope, and fans.*)
5. As a group gains experience with each landform, have the learners in that group look at the examples and read the landform's name and description from the *Landforms Handout*.

**Reflect (10 min)**

1. When all groups have finished exploring, gather them. Ask: **Which landforms were you able to make? Which were you not able to make? Why?** (*Responses will vary. A possible response is that the sand dunes were difficult to replicate because of the scale of the images.*) **What similarities or differences did you notice between landforms on Earth and Mars? What do these observations tell you?** (*Responses will vary. A possible response is that landforms are similar on Earth and Mars, suggesting that Mars has things like wind and water on it.*) **Why might scientists be interested in these landforms?** (*Responses will vary. A possible response is the landforms formed by water on Earth may provide evidence of past liquid water on Mars.*)

**Support Thinking**

When introducing questions that require learners to extend their thinking and formulate new ideas, invite them to share ideas with a partner or small group before sharing with the whole group.

2. Revisit the Guiding Question: **What are landforms and how are they formed?** (*Processes (such as wind, water, volcanic activity) on other planets create the same landforms that they do on Earth. For example, alluvial fans, deltas, and river valleys form in water. Sand dunes are formed by wind and lava flows are formed by volcanic activity.*) Consider adding these landforms and images/drawings to the chart/poster to reinforce the new vocabulary.
3. **What are the different ways that land is shaped by water near our community?** (*Accept all responses. Responses will vary. Possible responses include hills, mesas, mountains, and plateaus; canyons, valleys, and ravines; and lakes, ponds, coastlines,*

PLANETS Remote Sensing Science Activity 1: Introducing Landforms

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**After the Adventure**

1. Clean up:
  - Throw away the straws, face masks, cleaning wipes, and gloves (if used). Allow the sand to dry. Store all Wind and Water Station materials for reuse.
  - Save the Guiding Questions Chart, Remote Sensing Definition, and Our Questions about Mars Chart for use in future Activities.
2. Plan ahead for Science Activity 2. See Activity 2 Materials Preparation.
3. Take time to reflect on the following educator prompts: **How did you support learners' needs in acquiring the vocabulary used in this activity? How could you use similar strategies during future activities?**

**Step-by-Step Guidance**

Each adventure guides you with a structured but adaptable approach:

- Clear, numbered steps walk you through leading each activity and discussion
- **Bold text** provides suggested words to use with your learners
- *Italic text* shows typical learner responses you might hear
- The scripting serves as a roadmap while leaving room for your own teaching style

**Instructional Support Tips**

Peppered throughout the Educator Guide are tip boxes that offer instructional advice to guide you through each adventure's key teaching moments.

**Support Thinking** tips provide language to build collaboration, social-emotional skills, and STEM identity as learners work together.

**Teaching Tips** help you manage materials, group learners effectively, and guide investigations smoothly.

**Support Learner Differences** tips ensure activities work for all learners, with specific supports for Indigenous learners, emergent multilingual learners, and learners with differing abilities.

**Connecting Across Activities** tips show how learning links across pathways and STEM disciplines.

**Level Up** tips help you adapt and extend activities beyond the base adventure.