

Intro Video: (5 mins) - Galileo Probe

<https://www.youtube.com/watch?v=4oDR9XRNSHl>

#<https://www.youtube.com/watch?v=qY1R0UBBZk0>

Overview:

The images of other worlds have come to us through remote sensing, cameras, radar, and other advanced means. We collect data for interpretation and extrapolation. The following activity will simulate what it is like to explore an unknown land. By using a grid system and taking measurements you will be able to collect data from a simulated landscape. Students will make drawings of what the landscape looks like from the data collected.

Beforehand: Prepare the Lid of the Alien Landscape

Cover the top of the lid with graph paper. Mark off a grid system every ten centimeters. Label the grid system with letters on one axis and numbers on the other.

Use the nail to make holes at the intersections of the grid lines. Place the lid over the shoebox alien landscape.

Make an Alien Landscape (20 mins)

Materials: clay, lid, volcanoes

Look at pictures of Mars and Venus. Ask students to terraform or sculpt an alien landscape..

Make sure that included in the alien planet are volcanoes, canyons, a lake made from the inverted lid.

After it has dried fill the "lake" with water.

Exploring the Alien Landscape (20 mins)

Have students tell their partners that they have discovered a new planet. It is the partners' job to make observations on what the surface may look like. They accomplish this by using the Data Sheet, centimeter ruler, and Planet Probe. At each coordinate gently insert the Planet Probe until it encounters an object. Mark on the Planet Probe the depth of the object. Remove the Probe and examine the end. Record on the Exploration Data Sheet the depth in centimeters and any other observations such as the presence of water.

Continue collecting and recording data. Use grid paper to create a side view of each letter column. From these side views or transients the explorer will be able to interpret the surface of the Alien Landscape.

Draw different sketches of what the landscape may look like after each side view. Once the entire landscape data has been collected a final drawing and written paragraph can be made. Open the lid of the Alien Landscape Shoebox and compare your exploration with the model. List the features you correctly "discovered" and those that were not known.

“Battleship”

The grid system can be used with other known objects inside the box and alien landscape. For example, put a small model of a space ship inside the alien landscape box. Close the lid and challenge your partner to find the ship with the "Planet Probe." Challenge them to locate the spacecraft with only 10 -20 tries with the probe.

Wrap-Up (5 mins)

Europa video + Discussion

<https://www.youtube.com/watch?v=rdXGifkQ1xY>

Additional Probe: <https://saturn.jpl.nasa.gov/science/titan/>

Adapted from <http://www.pbs.org/lifebeyondearth/resources/teacher.html>