Pack a Space Telescope – NISEnet

Materials:
- Ariane 5 Rocket “testing site” (PVC pipe stand)
- Honeycomb-shaped golden mirror cards (100)
- Sunshield cards (100)
- String
- Clear tape
- Scissors
- James Webb Space Telescope poster
- Activity and facilitator guides
- Information sheets
- Tips for Leading Hands-on Activities
- Colored construction paper and markers (optional)

Resources:

Learning Goals:
- Engineers design, build, and test new technologies to study the universe.
- Careful planning and design help us make new discoveries and better understand Earth and space.
- NASA teams work together to launch, guide into orbit, and operate a space telescope.

Intro (example):
You may have heard the word “satellite” in other contexts. A satellite is an artificial object placed into orbit around a planet or other object in space. The James Webb Space Telescope is a type of satellite that will orbit around the Sun once it is deployed. It will look out to study the universe. Scientists chose the location for the telescope not to get closer to the objects it images, but to avoid the distortion created by light being bent by Earth’s atmosphere and to better access infrared wavelengths of light energy. The challenge is to construct a model of the James Webb Space Telescope (mirror and sunshield), fold it to pack into the rocket payload compartment (PVC tube), and deploy or open it up by pulling only on the two pieces of string that are taped to the model.

Steps:
1. Build a simple model space telescope! Your design should include at least one golden mirror array, one sunshield, two pieces of string, and some tape.
2. The telescope will need to fold to fit into the white tube representing a rocket compartment. You must be able to unfold it just by pulling on the two pieces of string.
3. Next, test your design! Fold your space telescope into the rocket model and use the string to deploy the telescope.
4. Did it work? If not, make some changes and try again! If it did, you can try modifying your design.

Reflection (throughout):
Why is it important to look at things outside of our planet? What would you like to look for in space? What did you try that didn’t work? Why not? What about your design was successful? What would you do differently next time? Why is it important to design and experiment to solve a problem?

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