Activity 1: Seed Collection and Observation

In this activity, learners will extract seeds from produce in your garden or fridge for observation and analysis. They will collect data about the seeds and create a seed-bank art piece to prepare for space. *Background information can be found at the end of this activity guide*

Activity

In order to grow food in space, there is one thing astronauts will desperately need: seeds! Almost all plants come from seeds, which can be grown to provide food. Food production is an essential key to long-term survival on another planet. In order to investigate how humans might grow food in space, our project begins with an observation and analysis of seeds!

1. Gather your learners and the materials needed!
2. Begin with a discussion, using some of the questions below:
    a. *Why are seeds important for plants?*
    b. *How might seeds be similar or different from plant to plant?*
3. Gather 3-6 different fruits or vegetables from around the house or outside. Produce items, like apples, oranges, and squash work best for this activity, but feel free to expand beyond that.
4. Record the items on your data sheet and make a quick hypothesis:
    a. *What do you think the seeds will be like from each plant?*
5. With adult help, use a knife to cut open each item. Remove seeds and separate them into piles. Store the rest of the food item in a container, or eat it as a healthy snack!
6. Make observations about the seeds and record results on the data sheet:
    a. *Shape of seed*
    b. *Color of seeds*
    c. *Texture of seeds*
    d. *Number of seeds per plant*
    e. *Size of seeds**
    f. *Weight of seeds***

Suggested Materials

- Data Sheet (printable version)
- 3-6 different fruits or vegetables with seeds
- Knife and spoon
- Cutting board or surface to place seeds on
- Writing utensils
- Ruler
- Scale (optional)
- Magnifying glass (optional)
- Glue
- Craft Paper
- Markers, crayons, or colored pencils (optional)

Safety

Adult supervision is recommended throughout this experiment. Some vegetables and fruits will require a knife to slice open and extract seeds. Seeds are small and easy to swallow.

*If using a ruler

**If using a scale

7. Once you are done, discuss your observations using some of the following questions:
    a. *Were all of the seeds the same? How were they similar or different?*
    b. *How might these differences help the plants survive?*
    c. *What adaptations do you think they have?*
8. Create a “seed-bank” art piece using craft paper, glue, markers, and your seeds! Let your learners' creativity flow as they use seeds to create a pattern, organize a chart, illustrate a picture, or whatever comes to them.

By analyzing seeds of fruits and vegetables, scientists can determine which seeds might survive the long, dry journey to another planet. Then, astronauts will have to face the challenge of growing plants under limited resources and harsh conditions of space. *Which seeds would you want to take with you?*

Background

What does a seed need to grow into a plant?

Seeds must be given the right balance of water, sunlight, air, and nutrients. Each species of plant requires a different balance of these elements. Some need large amounts of water and sun while others can survive droughts and low-light conditions.

What is an adaptation?

An adaptation is a characteristic of a living thing that helps it survive in its environment. Different plants have different adaptations depending on where they are grown, what time of year they are planted, or how they produce food. The seeds in your experiment may vary in shape, color, number, or size because of their adaptations.

What is a seed bank?

A seed bank is a collection of seeds from different plants, similar to a library. These seeds are stored in special conditions that prevent them from sprouting. They are stored like “back-up” seeds in case they are ever needed. Seed banks can be kept on Earth, and even in Space!

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How do you think the seeds will be similar, or different, from plant to plant?

I predict...

Record your seed observations:

Type of Food/ Plant	Shape	Color	Texture	Number	Size	Weight

Optional: Use the space below to sketch each plant's seed:

How were the seeds similar, or different, from plant to plant?

I observed...

How might these differences help the plants survive?

I think...