Sleeping Seeds and the Scientific Method

Kapunahala Science Day

2nd-3rd Grade

Good Morning fellow scientists! Today we will be exploring how scientists use the **scientific method** to explain certain events or happenings, also called **phenomena**. Scientists often try to find explanations for phenomena to help them make better predictions about future events.

The first step in the scientific method is observation. In this step you use your senses, especially your eyes, to start describing what you observe. Scientists make observations to describe phenomena. After making observations scientists try to explain their observations. A guess or explanation that can be tested through experimentation is called a **hypothesis** (plural hypotheses). A good hypothesis should lead to successful predictions about the experiments you plan.

When a hypothesis has been created the scientist comes up with experiments to test the hypothesis. This is the third step in the scientific method. As you will see today any number of experiments may be used to test your hypothesis. During experimentation scientists collect **data**. Data is usually in numerical form. For example, data on seed experiments may include number of days to sprouting or total number of seed to sprout at the end of your experiment.

Once all the data has been collected scientists **interpret**, or try to make sense out of, the information. From these interpretations **conclusions** are made. A conclusion is an explanation for a phenomena based on the data collected during experimentation.

Review of the Scientific Method

- Observation
- Hypothesis
- Hypothesis Testing or Experimentation
- Interpretation
- Conclusions

Sleeping Seeds and the Scientific Method

Observations

Start off by asking where baby plants come from

Seed or fruit
Is object is seed or fruit
Have kids break open Milo and Caesalpinia fruit

Make Observations
Multi-sensory approach to different seed
Kids draw pictures and write descriptions for different seed share with others

Hard Seed v. "Soft" Seed
Hammer and pliers test on different seed
On somebody's hand

Why would it be important for seed to be so hard?

Discussion on Dormancy

Define dormancy through exercise routine. Have one parent do jumping jacks one sit still. Kids take pulse of both. Go into how dormant seeds are still alive just slower to germinate.

Different types of dormancy
Hard seed
Underdeveloped embryo
Mechanical
Physiological
Chemical

Develop Hypothesis

Have kids come up with their own hypotheses about hard seed and share with others.

Hypothesis Testing

Explain some possible treatments to test hypotheses
Scarification tools and techniques
Controls
Replication
Keep track of materials and methods
Talk about different types of structures for germination
Requirements for germination
Data collection

Make graphs and interpret:

1) trt all the same but greater than controls
2) ctrl greater than all treatments
3) 1 trt greater than rest

Conclusions

Do this at home

Have kids practice different scarification techniques on Haole Koa seeds.