INTERMEDIATE SCIENTIFIC INVESTIGATION PLANNING TEMPLATE

Our **investigation** is: **Observe seed germination and understand what is happening, scientifically. Plant the germinated seed and once its matured (3 weeks), use it to identify plant parts, what they do, and their correspondence to food we eat.**

Our **prediction** is: **N/A**

The **materials** we will use are (include measuring tool):

- Bean seed (pinto, lima, navy)
- water
- Ziploc bag
- Paper towels
- soil
- containers

The **variable** we are **changing** is:
Nothing

The **measured** (responding) **variable** is**:**
nothing

These are the **controlled variables** (things kept the same):

- **Location where seeds are germinated**
- **Same kind of seed**
- **Sunlight**
- **water**

The step-by-step **procedure** is:

1. **Each student can do this experiment on his or her own or with a partner. Give each student a Ziploc bag, a seed, and a paper towel. Fold the paper towel twice so that if you unfolded it there would be four sectors. Keep it folded, though. Wet the towel, put it in the Ziploc and add a few seeds to the bag, making sure they have contact with the wet towel. Put the bag in a warm place (can be near light or in dark).**
2. **Have the students observe changes in their seed each day. As changes start to happen, explain to them what is occurring (see notes below).**
3. **Once the seeds have germinated, you can plant them by digging 1.5 inch holes and burying each seed in one.**
4. **Record observations as the plant surfaces. Size? Shape? Color? Any already existing abnormalities? How does their plant compare to their neighbors'.**
5. **After a few weeks, have the students uproot their plant and bring it inside to 'dissect' or take apart to identify its parts.**
6. **Scientifically identify the plant parts and relate them to the foods we eat (i.e. lettuce is a leaf, broccoli is a flower).**

DATA TABLE

Title of the Data Table

CHANGED (manipulated) VARIABLE		Trial One (in cm)	Trial Two (in cm)	Trial Three (in cm)	Average (in cm)

Conclusion:

- ☐ Prediction
- ☐ Low data
- ☐ High data
- ☐ Wrap it all up

Total Score _____

Next investigation:

What question might you ask next to lead you into another investigation?

Scoring Items	Point
Prediction	
Materials	
Procedure (written or diagrammed with logical steps)	
Variable kept the same (Controlled Variable)	
Variable Changed (Manipulated Variable)	
Variable Measured (Responding Variable)	
Recorded measurements into a Data Table	
Trials are Repeated	
Total Score (8 possible points)	

Grade(s) : 3

Subject Area: Science

EALR/Standard:

2-3 Inquiry (A-D)
2-3 Properties 2A-B
2-3 Physical Science 3A
2-3 Life Science 1A

Activity: Observe a seed germinate, identify what is happening scientifically, plant the seed, and use the plant that sprouts to identify plant parts, their purpose, and their correspondence to what we eat.

Lesson created by Robin Lewis, Environmental Studies Intern, Whitman College Spring 2010

Goals:

- Begin to quantify what is happening to a seed and plant in scientific language and understanding.
- Illuminate for students which parts of plants they are eating; in other words connect this lesson in identification to their lives.

Brief description:

Students germinate and grow a seed into a plant in order to understand the different parts of a plant and what is happening that makes it change.

Complete lesson plan on back:

Materials

Students need an Investigation Planning Template, a garden plot or indoor pots, and seeds. The teacher will want to have other visual aids, like the powerpoint included in this lesson or bring in produce from their home to further illustrate plant identification. Whitman College has a high-powered microscope that could be used to see the seed up close.

Procedure

(See above in worksheet)

Additional Activity

Read "One Bean" by Anne Rockwell. It's an illustrated children's book that goes through this experiment in a kid appropriate manner.

New vocabulary

____germinate_____ ____embryo____ __cotyledon____ ___endosperm_____

Works Cited/Adapted from

Healthy Foods from Healthy Soils by Elizabeth Patten and Kathy Lyons

Green Thumbs by Laurie Carlson

http://www.ehow.com/how_2108951_science-experiment-child-bean-plants.html