Gold Seal Lesson:

Copernicus Education Gateway

Author(s): Gail M. Venezio			***Lesson Title: SEEDS***			
Grade Span			***ICLE Application Model***			
K-4	***5-8***	***9-12***	***A***	***B***	***C***	***D***
X						***X***

Instructional Focus:

Listening
Students listen for a variety of purposes appropriate to the grade level.

Measurement
Students use a variety of tools and techniques of measurement in a problem-solving situation. Students communicate the reasoning used in solving these problems.

Statistics and Probability
Students use statistics and probability to analyze given situations and the results of experiments. Students communicate the reasoning used in arriving at a conclusion.

Basic Concepts and Knowledge
Students develop an understanding of scientific concepts using facts, theories, principles, and models.

Performance Task

- A day before your lesson soak, kidney beans in water. Soak enough for your class.
- Have students look at and observe a dry kidney bean. Then give each student a bean which has been soaked overnight. Encourage discussion about how they are alike and different.
- Have students peel off the seed coat, split the seed in half, showing them the baby plant called the “embryo.”
- Explain to the students that the rest of seed is actually food storage for the tiny plant.
- Explain to students that we will now watch a seed grow, in a bag, to see how the plant grows and develops.
- Give each student a bag with his or her name on it. Inside the bag, place a paper towel slightly moistened with water. Place the bean on top of the paper towel.

Variation: Give students 2 bags and 2 seeds, with same moist towel. Have students keep one bag on their desktop, and one inside their desk, or a closet. (Without sufficient light.)

- Each day use a metric ruler and measure the growth in roots, and stem growth from each plant. If you are using the variation, be sure to get measurements from both bags.
- Record measurements and also write a journal entry to explain what you have observed.
- While you are watching and recording information, use this opportunity to soak and view and bag and grow other plants too. Popcorn kernels are really interesting to see. Fill a baby-food jar with popcorn kernels, fill with water, and gently put lid on top of jar and watch what happens next!

ICLE Essential Skills

Use writing as a tool for learning in formats such as learning logs, laboratory reports, note-taking, journals and portfolios. (ela40)
Follow oral or written directions. (ela4)
Understand the best procedures for statistical ***data collection, organization, and display*** including making estimates and predictions and drawing inferences***.*** *(m5)*
Know and apply the principles of scientific inquiry*. (Implicit in this statement are the processes of prediction, estimation, developing hypotheses, drawing conclusions, evaluation, and following ethical principles and professional procedures.) sS114 Not Ranked)*
Know the metric system and the units of metric measure and convert metric units to English units. (s4)
Make observations using senses and instruments. Inferences and interpretations are arrived at based on observations. Classify observable properties and organize observations in a meaningful and logical way. (s5)
Know the structure and functions of roots, stems, leaves flowers and other parts of plants. (s11)

Scoring Guide:

Rate each of the following characteristic on a 3-0 basis, where 3 is excellent.
3=Excellent quality
2= Satisfactory quality
1=Unsatisfactory quality
0=Does not attempt or does not show skill/knowledge

Characteristic	**Score**
Students follow all directions for experiment.	_____
Students effectively observe seeds.	_____
Students can effectively and accurately use a metric ruler.	_____
Students can record and keep accurate records, and data collection.	_____
Students keep daily journal.	_____
Students can make predictions about light vs. no light.	_____

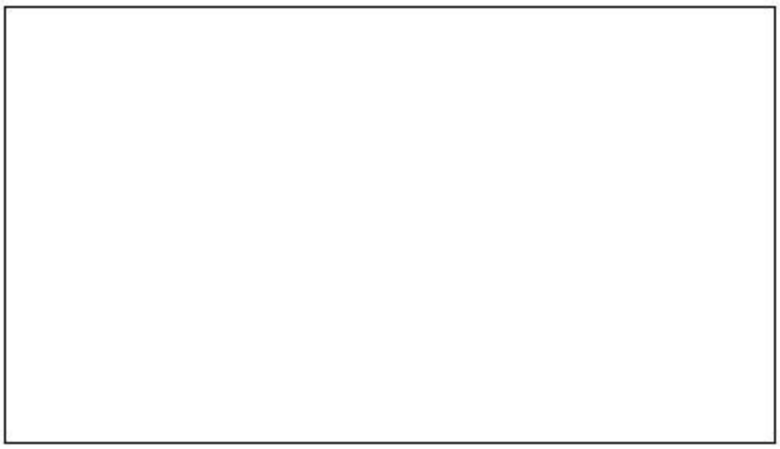
Keywords

English Language Arts	Mathematics	Science
Reading	**Algebra**	**Earth Science**
Writing Journals Note Taking Organization	**Geometry**	**Life Science** Cause and Effect Photosynthesis Plants,
Communications Illustration Follow Directions	**Statistics** Data Analysis Prediction Data Collection Measurement	**Chemistry** Oxygen Scientific Process
Literature	**Calculus**	**Physics**
Other	**Trigonometry**	**Other**
	Other	

Picture, Chart, or Graph file name(s):

Name_____

Daily Plant Journal



Day Number:_____

_____

_____

_____

_____

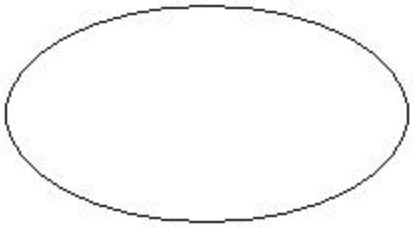
_____

_____

Name_____

Seed Study

1. Trace a dry kidney bean. What does it look and feel like?



Dry Kidney Bean

2. Measure the dry seed. It measures_____cm.

3. Measure the wet seed. It measures_____cm.

4. How is the wet seed the same or different than the dry seed?

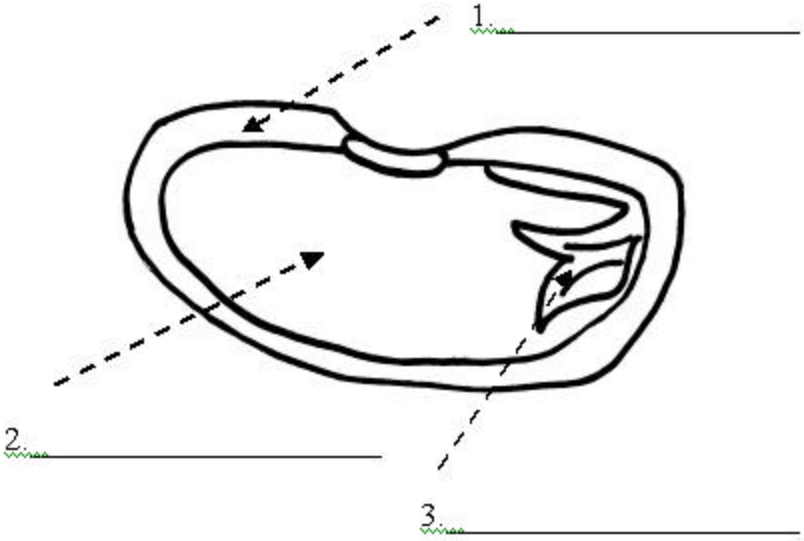
5. Take off the seed coat. Why does the seed need a coat?

6. Can you find the embryo? Draw it.

My Seed Embryo

Name_____

Seed Parts



Parts of a Seed

Seed Coat

Food Storage

Embryo