

County Implementation Award Program (CIAP) Math and Science Lesson

<p>Unit Title: All About Apples</p>
<p>Lesson Title: Comparing Seeds</p>
<p>Author: Brenda Stracener</p>
<p>Grade Level: 1st</p>
<p>Time Frame: 2 days, 50 minutes each lesson</p>
<p>Targeted Standard(s): 1-LS1-1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. MD.A.1 Order three objects by length MP6 Attend to precision.</p>
<p>Short Description of Targeted Phenomenon: Share the video of a coconut floating (https://www.youtube.com/watch?v=VtzMpjCDA5Y) asking students to share what they notice and wonder.</p> <p>Plants are able to grow new plants with seeds. Students will examine the internal and external structures of seeds that allow them to grow new plants.</p>
<p style="text-align: center;">Three Dimensions of NGSS</p> <p>Science & Engineering Practice/s (SEP): <i>Constructing Explanations and Designing Solutions</i> <i>Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.</i> <i>-Use materials to design a device that solves a specific problem or a solution to a specific problem. (1-LS1-1)</i></p> <p>Crosscutting Concept/s (CCC): Patterns: <i>Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.</i> Structure and Function: <i>The shape and stability of structures of natural and designed objects are related to their function(s).</i></p> <p>Connection to Engineering, Technology, and Applications of Science: <i>Influence of Engineering, Technology, and Science on Society and the Natural World:</i> <i>-Every human-made product is designed by applying some knowledge of the natural world and is built by using materials derived from the natural world.</i></p>

Disciplinary Core Idea/s (DCI): LS1.A: Structure and Function: *All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (1-LS1-1)*
LS1.D: Information Processing: *Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. (1-LS1-1)*

Language Supports:

Students create chart of prior knowledge of seeds, sentence stems, pair share and small group work.
 Vocabulary: seed, coating, embryo, shoots, roots

Materials Needed:

various seeds (three types), recording sheet, **Johnny Appleseed** read aloud book (read to class before science lesson)

Objective(s): Students will be able to:

1. Identify the seed coat of each sample and will examine and compare their characteristics.
2. Identify the embryo of each sample and will examine and compare their characteristics.
3. Compare the characteristics of seed coatings and embryos. They will describe similarities and differences and will compare and order the sample seeds by smallest to largest.

How Math and Science concepts/skills/practices were integrated in this lesson:

1st Grade students study the structure of and function of the parts of plants in science. In math, students compare and order the length of three or more objects. Students attend to precision in their measurements.

Possible Challenges /Misconceptions:

Participation and support of all members during group work tasks; differing writing abilities of students

Formative Assessment:

Prior knowledge of students will be assessed through whole class discussion (recorded on Science Summary Chart, first column).

Teacher observation of student exploration

Discussion and recording on Science Summary Chart, second and third column (What We Learned, What We Wonder)

Lesson Opening (10 minutes)

Teacher Actions (10 minutes)

Engaging Phenomenon

Show What Makes Corn Grow?

<https://youtu.be/1uSmEM6ON7s>

Student Actions

Watch video. Pair share about what happened with the seed in the movie and other experiences with seeds.

<p>Connect to read aloud on apples. Ask, what makes apples grow? Solicit student prior knowledge of seeds and create first column of Science Summary Chart. (What We Know)</p>	<p>Share knowledge of plants and seeds for chart.</p>
<p>Lesson Introduction (5 minutes)</p>	
<p>Teacher Actions Tell students they will be exploring the inside and outside of various types of seeds. Ask how can we compare the three seeds? (Guide towards senses-- How does it look? (sight), What does it feel like? (touch) What does it smell like? (smell)</p>	<p>Student Actions Pair share and contribute ideas of characteristics to use on recording form. Whole group: Discuss and choose three characteristics. The characteristics should be the same for each group in order to allow for a common discussion after exploring.</p>
<p>Body of Lesson (25 minutes)</p>	
<p>Teacher Actions Arrange students in groups of three or four. Day 1 -Give groups a set of seeds to explore and compare characteristics of the seed covering and seed. Compare size of seeds and record smallest to largest. (Recording Sheet) Day 2 -- Give groups a set of pre-cut samples of seeds to compare and explore the embryos of seeds. Draw a picture of each seed embryo. Record similarities and differences of the embryos.</p>	<p>Student Actions Explore and compare each seed. Record findings on recording sheet. Share their findings with another small group after exploring seed coatings/seeds and after exploring seed embryos. Put seeds in order from smallest to largest. Describe how the seed coat protects the inside of the seed. (Recording Sheet)</p>
<p>Lesson Closure (10 minutes)</p>	
<p>Teacher Actions Whole class: Discuss observations and new learnings. Create Science Summary chart. (Summary chart should have three columns.) The three headings are: What we know What we learned What we wonder</p>	<p>Student Actions Share findings with a partner (from a different small group) before whole class discussion.</p>
<p>Summative Assessment: Recording Sheets, Teacher observation of student participation during discussion and completion of</p>	

Science Summary Chart.

Other Teaching Resources:

Oh, Say Can You Seed? All About Flowering Plants by Bonnie Worth

Lab Safety: Check student information for allergies when choosing three seed types to study.

Extensions (if any):

Draw and design seed coats for a new plant embryo. The seed coat needs to be able to protect the seed embryo as it travels gusts of wind to rocky soil. The seed coat should be light enough to be carried by wind but must also be sturdy.

To connect back to the Performance Expectation, have students design a solution to a human problem connected to the learning done in this lesson, such as developing ways to distribute a particular item based on a seed distribution method such as wind or attachment. **(Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.)**

Name _____ # _____

Name of Seed			

Compare the size of the seeds

_____ Smallest _____ Largest _____

How do the seed coats protect the inside of the seed? _____



Name _____ # _____

Draw a picture of the inside of each seed covering

How are they the same? _____

How are they different? _____

I know that _____.

I learned that _____.

I wonder _____.