



Lesson Title: My Tiny Seed

Grade: 2-3

Duration of Lesson: 1 – 50 minute class period followed by 20 minute observation and data recording sessions for two weeks. One final 20 minute class.

Brief: *This lesson teaches observation and recording skills.*

Materials:

Cotton Balls

Ziploc Bags

Seeds – several packages (radish, beans, or sunflower recommended)

Copy of the **My Tiny Seed** book for each student, assembled

Container of water (eyedroppers if available)

Recommended Reading:

How a Seed Grows by Helene Jordan

The Tiny Seed by Eric Carle

The Carrot Seed by Ruth Krauss

Key Terms:

germination, dormant, seed, cotton, swell, root, leaf, sunlight, grow, seedling, soaking, and nutrients.

Standards/Objectives

Montana State Standards:

Science: Content Standard 1 - Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate results and reasonable conclusions of scientific investigations. Benchmarks 1.1,1.2,1.3; **Science Content Standard 3** - Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment. Benchmark 3.1

<p>Communication Arts: Benchmark 2.8 Students will recall and explain a series of events or the sequence of information.</p> <p>Math: Content Standard 1 –Number sense and operation. Benchmark 1.5</p> <p>Arts: Content Standard 1- Students create, perform/exhibit, and respond in the Arts. Benchmarks 1.1, 1.3, 1.4 Content Standard 2 – Students apply and describe the concepts, structures, and processes in the Arts. Benchmarks 2.1, 2.2, 2.3 Content Standard 6 - Students make connections among the Arts, other subject areas, life, and work. Benchmark 6.4</p>	
<p>Students will understand: Students will understand the germination process through observation. Students will identify changes in seeds through observation.</p>	<p>Essential question(s): What happens to a seed when it is given a growing medium and water?</p>
<p>Students will know: Students will know that through germination a seed makes a new plant.</p>	<p>Students will be able to: Inquire and observe seed changes during the germination process.</p>
Performance / Observations	
<p>Performance task(s): Each day students will observe any changes to the seed/plant. Students will complete a germination journal with drawings of the process.</p>	<p>Other evidence: Students will use key terms in journaling.</p>
Learning / Inquiry Activities	
<p>Introduction/prep:</p> <p>Prep: read <i>My Tiny Seed</i> before starting the lesson, the book has day by day steps for the students which are easily guided. Gather materials on the materials list above and moisten the cotton balls. All other materials will be easily accessible in the school.</p> <p>Bring in and display several packages of seeds and inform students they will be making their own tiny garden for a seed to germinate. Read the books from the recommended reading list to the class.</p> <p>Learning activities: The process by which a seed goes from dormancy to growing is called germination. Seeds have different requirements for germination; some are very difficult to germinate without the elements of nature and years of exposure. Vegetable seeds are relatively easy to germinate, ask the class to explain why we might eat vegetables whose seeds are easy to germinate instead of those which are hard to germinate.</p> <p>The key idea of this lesson is to explore germination, day by day, and to inquire and record in drawings the process. A secondary key idea is for students to make a link between seeds and the food we eat. Explain to students that the majority of our food comes from seeds. Refer to the USDA Food Pyramid. Which groups of food come from seeds? Make a list on the board of foods that we eat which originated from a seed.</p>	

Examples: cereal, bread, crackers, radishes, carrots, apples, and even potatoes are propagated from something called a seed potato, although it is not a real seed. Even oils are extracted from seeds. Some other examples are given below. (Appendix A)

Ask students how many of them have planted a garden in the past? Have they been able to see the seeds germinate in the soil? Why not? Would they like to watch what happens to seeds once they are planted and given the elements they need to germinate? In this lesson students will watch and record the seed germination process, development of a root and leaves, and have a chance to see their seed grow into the type vegetable from which the seed originated.

Have students begin by writing their name on the front cover under the “drawings by” space on the line.

Pass out pre-moistened cotton balls (2 cotton balls for each student), 2 seeds, and a zip lock baggie. Ask the students to place the cotton in the bags, and then to lay the seeds in the bag on the cotton. Pass out the student booklets *My tiny Seed*. This book functions as a student journal of the germination process.

Students will begin with page 1, completing all pages up to page 6 by the end of today’s lesson. Note that when students complete page 5 they will need one drop of water to dampen each cotton ball, too much water will drown the seed. If too much water is added simply poke a hole in the bottom of the bag and drain some water out. During the following days have the students take their books out and complete a page or two, depending on the changes observed in the seeds. Allow time for students to discuss the changes in their seeds during each teaching session. Ask students to explain what they saw when their seeds germinated, ask them if they think the same thing happens to billions of seeds each year under the ground in their own communities. Ask them if the same process is happening all over Montana as farmers grow grain, vegetables, and other crops for the grocery store. Further discussions can be held regarding the source of seeds, making sure students understand that seeds do not come from the store, but rather from plants.

Seedling Extension:

When the seeds are germinated and have become seedlings, prepare a time and place for planting the seedlings, this can be done in an indoor garden in a cup or **Grow and Know Your Food** garden box. Make sure the plants get plenty of sunlight or are under a grow light. This lesson is best taught in early fall or late spring so that the plants can be transplanted outside in a garden area.

Grow and Know Your Food garden box instructions can be found under the Grow and Know with Montana Agriculture project on the teacher tab of aginmontanaschools.org

Appendix A

Examples of foods we eat that include seeds, are seeds, or were grown from seed.

GRAINS:

- * Wheat
- * Barley
- * Oats
- * Rye

OILSEED CROPS:

- * *Cotton*
- * *Rape*
- * *Safflower*
- * *Soybeans*

LEGUMES:

- * Dry Beans
- * Dry Peas
- * Lentils

FRUIT CROPS:

- * Apple
- * Apricot
- * Avocado
- * Blackberry
- * Blueberry
- * Cranberry
- * Gooseberry
- * Huckleberry
- * Raspberry
- * Strawberry
- * Cherry
- * Grapefruit
- * Lemon
- * Mandarin
- * Currants
- * Kiwi
- * Litchi
- * Mango
- * Melons
- * Cantaloupe
- * Honeydew
- * Watermelon
- * Peach
- * Pears
- * Plum

HERBS/SPICES:

- * Anise
- * Allspice
- * Chives
- * Cinnamon
- * Coriander
- * Fennel
- * Lavender
- * Mustard
- * Nutmeg
- * Oregano

NUT CROPS:

- * Almond
- * Coconut
- * Cacao
- * Coffee
- * Cashew
- * Chestnut
- * Macadamia

VEGETABLE CROPS:

- * Artichoke
- * Chinese cabbage
- * Asparagus
- * Dill
- * Pumpkin
- * Broccoli
- * Eggplant
- * Radish
- * Brussel sprouts
- * Garlic
- * Rutabaga
- * Cabbage
- * Kale
- * Carrots
- * Kohlrabi
- * Squash
- * Cauliflower
- * Leek
- * Turnip
- * Mustard
- * Celery
- * Onion
- * Parsley
- * Pepper
- * Lima beans
- * Collards
- * Cucumber
- * Corn