**Take Action:** Growing Food 12

**Grade:** 1-2

**Date-Range**: Winter-Spring

**Length:** 2 class periods followed by daily observations

**Standards:**

**Within SCIENCE**

**4-LS1: From Molecules to Organisms: Structures and Processes**

* **4-LS1-1**

**5-LS1: From Molecules to Organisms: Structures and Processes**

* **5-LS1-1**

**Speaking and Listening: Anchor Standards**

* **CCSS.ELA-LITERACY.CCRA.SL.1**
* **CCSS.ELA-LITERACY.CCRA.SL.4**

**Language: Anchor Standards**

* **CCSS.ELA-LITERACY.CCRA.L.1**
* **CCSS.ELA-LITERACY.CCRA.L.2**
* **CCSS.ELA-LITERACY.CCRA.L.4**

**Writing: Anchor Standards**

* **CCSS.ELA-LITERACY.CCRA.W.10**
* **CCSS.ELA-LITERACY.CCRA.W.7**
* **CCSS.ELA-LITERACY.CCRA.W.8**

**Mathematics: Practice Standards**

* **CCSS.MATH.PRACTICE.MP4**
* **CCSS.MATH.PRACTICE.MP5**

**Overview:** Students will categorize plants into groups, describe what plants need for healthy growth, start their own garden by planting seeds.

**Background Information:** A seed is the start of a new plant. Seeds are covered in a seed coat that keeps the tiny leaves and roots inside safe from harm. A seed contains food for the new plant to use until it grows big enough to reach sunlight and the plant can make its own food. A seed’s germination is dependent upon moisture, temperature, and light. Many of the foods we eat come from plants, and most of these plants start out as seeds. Farmers plant seeds to grow everything from the tomatoes that are made into spaghetti sauce to the wheat that is made into bread to the watermelon that you eat at a picnic. A seed can be both the start of a new plant and the start of a new meal!

**Essential Questions/Goals of Module:**

* Categorize plants or plant materials into groups.
* Describe things, such as light and soil that plants need for growth.
* Define environment.
* Draw conclusions from a seed sprouting investigation.
* There are many types of plants. Some are grown for their food such as grains, vegetables, and fruits. Other plants are grown for shade (tree) or as part of a landscape (flowers).
* Fruits and vegetables can be grown in small family gardens or on large farms. They provide healthy food for our diets.
* Most plants begin their cycle of growth as a seed.

**Vocabulary:**

**germination:** when a seed begins to grow

**Supplies/ Materials:**

**Activity 1**

* ***The Tiny Seed* written by Eric Carle**
* **Spray bottle with water**
* **Seeds divided by students**
* **Planting Trays and Soil**
* **Seed Book Activity Sheets**
* **Card Stock for Seed Book**
* **Magazines**
* **Scissors**
* **Stapler**
* **Plain paper, 1 sheet per student**
* ***The Tiny Seed* activity sheet, 1 per student**
* ***Growing Plants Songs* handout**

**Activity 2**

* **8 sheets of 8.5" x 11" white paper; shredded**
* **2 sheets of 8.5" x 11" colored paper; shredded**
* **Large bowl of water**
* **Blender**
* **Strainer**
* **2 packets of small seeds**
* **2 dish towels**
* **2 linen towels**
* **Rolling pin**

***Preparation***

***You will need seeds, trays, and potting soil provided for this activity. You will need to fill the trays, and have soil for the students to use.***

|  |  |  |
| --- | --- | --- |
| SEEDS/PLANTS | SEED Size | Approximate Germination Time (days)\* |
| Peas | large |  |
| Bean | large |  |
| Tomato | small |  |
| Cucumber | medium |  |
| Oregano | small |  |
| Mint | small |  |
| Sunflower | large |  |

***Tip from the Field Test: If you do Step 6, you might want to plant seeds on a Monday so students can watch the germination over several days before the weekend. Radish seeds work well for developing a timeline for germination because they sprout in just a few days. If you plant radish seeds on Monday, most of them are likely to germinate by Friday***

**Step-by Step Instructions:**

1. Ask students if they can think of any foods that come from plants. Allow students to list several.
2. Next ask, "Where do the plants that we eat come from?" Explain that many of them begin as seeds planted on farms.
3. Ask, "What does a seed need to grow?" Inform students that they will be learning more about the answer to this question today.

Procedures

**Activity 1: Seed Book**

1. Read *The Tiny Seed* by Eric Carle with the students. Ask students to recall what things the tiny seed survived in order to grow into a giant flower. What conditions do seeds need to germinate and grow? Discuss the connection between planting seeds and growing food.
2. Tell the students that they will be planting seeds and making “seed books” to document their observations of the growing seeds.
3. Distribute the seeds and seed book masters. Hand out the “Seed Book” activity sheets.
4. Now tell the students that they will create their seed books.
5. Let them design a cover and staple the activity sheets under the cover. Encourage them to draw the vegetables they will grow and their garden.
6. After students finish drawing their pictures, demonstrate how students will plant their seeds. Point out the trays that students will use and tell them that you have already added some potting soil to each one. You can also point out that the trays have holes in the bottom so extra water can drain out. Explain to students that they will place two or three seeds on top of the soil. Draw the pattern for arranging the seeds on the board or chart paper. After students place the seeds on top of the soil, have them put a thin layer (usually about ¼– 1/2 inch) of soil on top of the seeds. Students can then use a spray bottle to moisten the top layer of soil.
   * You may want students to bring their trays to you to add the top layer of soil. In that way, you can help them add the right amount—enough to cover the seeds well but not too deeply. Also, you may want to explain that they want to be gentle when they water so that the seeds aren’t disrupted (and that not all the seeds end up in a single place in the container). The spray bottle works well if you are just moistening the top layer of soil and that the soil beneath the seeds is already fully moistened. The spray bottle, however, is not an efficient method for thoroughly watering all the soil in the cup.
   * Having students plant 2-3 seeds in their cups helps ensure that students will have at least one seed germinate. Students will also be able to observe that even for a single type of seed, there is variation in the amount of time it takes for germination. At a later point, the seedlings may need to be thinned out so that there are one or two plants per cup.
   * Have the students write their names on their containers. Then show students where to put their containers. Make sure students record when the seeds were planted on the gardening record.
7. Complete *The Tiny Seed* activity sheet.
8. Sing the Growing Plants Songs together as a group.
9. ***As the seeds begin to sprout, have students make drawings of the seedlings in their seed books.***

**Activity 2: Recycled Seed Paper**

1. Discuss the concept of recycling with the students. Recycling is the process of changing waste into a new, useful material. Explain to the students that they are going to recycle paper and make new paper that can be planted. They will be putting seeds into their new paper. They will be able to plant the paper in soil, and if they provide the seeds with the conditions they need, new plants will begin to grow.
2. Show the students some of the seeds they will be putting into their seed paper, and ask them why a plant isn't growing. Explain that seeds do not begin growing until certain conditions are met; when a seed begins to grow, we call that germination. Ask the students what they think a seed needs to germinate. Tell them that a seed needs oxygen and the proper moisture and temperature to germinate.
3. Explain to the students that the seeds they will be putting into their seed paper will not begin to grow until they are warm enough and get the water they need.
4. To make the recycled seed paper, soak the shredded paper in a bowl of water for at least one hour to help the paper soften and break apart easily.
5. Scoop the paper into a blender. Add two cups of the soaking water and blend for about two minutes until you get a mushy pulp.
6. Pour the pulp through a strainer to remove some of the water. Do not squeeze all of the water out or the paper will not form together well.
7. Gently mix the seeds in.
8. Spread a dish towel out on a flat surface. Place a linen towel on top of the dish towel. The linen towel will keep the small seeds from sticking to the absorbent dish towel.
9. Spread the pulp out onto the linen towel and flatten it down with your hand.
10. Place another linen towel and dish towel on top of the pulp and use a rolling pin to further flatten the paper.
11. Allow the paper to dry overnight.
12. After drying, the paper can be cut into desired shapes and made into cards and bookmarks.
13. To plant, rip the seed paper into small pieces and spread throughout a garden or pot filled with soil. Cover the paper with about one inch of soil and water regularly.

My Seed Book

Write the name of the seed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Draw a picture of your seed.

**Write two or three words to describe what your seed looks like. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**I planted my seed on this date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. How many seeds did you plant in your cup? \_\_\_\_\_\_\_\_**

**Draw a picture to show how you planted your seeds.**

Watching Seeds Sprout

**Look at your pots each day. For each day that you observe your pots, write or draw the following information.**

**Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Number of days after planting: \_\_\_\_\_\_\_**

**Number of sprouts \_\_\_\_\_\_**

**Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Number of days after planting: \_\_\_\_\_\_\_**

**Number of sprouts \_\_\_\_\_\_**

**Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Number of days after planting: \_\_\_\_\_\_\_**

**Number of sprouts \_\_\_\_\_\_**

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**Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Number of days after planting: \_\_\_\_\_\_\_**

**Number of sprouts \_\_\_\_\_\_**

**Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Number of days after planting: \_\_\_\_\_\_\_**

**Number of sprouts \_\_\_\_\_\_**

Growing Plants Songs

Growing Plants (Sung to “Twinkle, Twinkle Little Star”)

Growing, growing little plants,

Growing plants need lots of air.

If by chance you see a weed,

Pull it; take care of your seed.

Growing, growing little plants,

Growing plants need lots of care.

Growing, growing little plants,

Growing plants need lots of sun.

If by chance you see a weed,

Pull it; take care of your seed.

Growing, growing little plants,

Growing plants is lots of fun.

Growing, growing little plants,

Growing plants in healthy soil.

If by chance you see a weed,

Pull it; take care of your seed.

Growing, growing little plants,

In healthy soil they will not spoil.

Growing, growing little plants,

Growing plants need water too.

If by chance you see a weed,

Pull it; take care of your seed.

Growing, growing little plants,

Growing plants is fun to do.