2ND GRADE
SEASONAL CHANGES IN OAK TREES AND HOW SEEDS HELP PLANTS MEET THEIR NEED FOR SURVIVAL

Summary: Students predict the size and shapes of seeds found in different fruits. They open the fruit and observe that seeds vary in number, size, color, shape and texture. Students discuss why plants make fruit and then travel outside to an area with oak trees. They find acorns and study seedlings, saplings, young, and mature oak trees.

Intended Learning Outcome for 2nd Grade:
Objective 1: Framing questions. Designing investigations. Conducting investigations. Collecting data. Drawing conclusions.
Objective 2: Sharing ideas with peers. Connecting ideas with evidence. Using multiple methods of communicating reasons/evidence.
Objective 3: Ideas are supported by reasons. Differences in conclusions are best settled through additional observations and investigations. Communication of ideas in science is important for helping to check the reasons for ideas.

Utah State Core Curriculum Tie:
Standard 1 Objective 2: Life Science
Communicate and justify how the physical characteristics of living things help them meet their basic needs.
Identify behaviors and reactions of living things in response to changes in the environment including seasonal changes in temperature and precipitation.

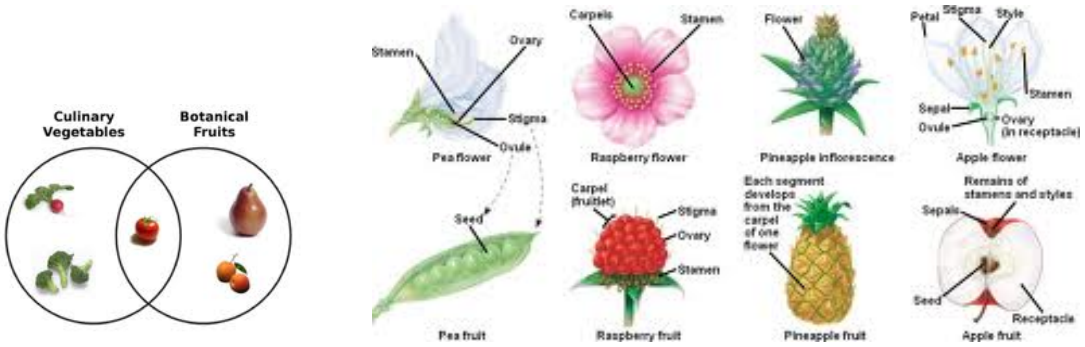
Preparation time: 40 min
Lesson time: 50 min
Small group size: works best with one adult for every 5 children

Materials:
A variety of fruit with seeds are needed. Realize that produce we call vegetables may really be fruit. If it has a seed in it, it's a fruit. Some ideas are: avocado, tomato, zucchini, cantaloupe, apples, pears, cucumber, peppers, oranges, kiwi, string beans, mango, lemon, acorn squash, and grapefruit.

Background information:

A fruit is developed from the ovary of a flower. It contains the seeds of the plant. Botanically speaking, anything that has a seed inside is a fruit. Many plants grow fruit to protect their seeds. Animals love to eat fruit. Animals will help with the seed dispersal of a plant because it eats a fruit with seeds, can't

digest the seeds, and the seeds get dispersed when the animal poops. It is a great strategy for a plant to make tasty fruit to aid in seed dispersal. Plant seed dispersal reduces competition for space and nutrients between offspring and parent plants.



Some plants have many small, more fragile seeds per fruit so that at least a few of them germinate. Other plants put all their energy into producing one large seed per fruit with the assumption that a bigger, tougher seed will survive to germination.

Pre-lab discussion: Discuss with students the plant life cycle and show them a poster or drawing on the board of the life cycle. Ask students if a zucchini is a fruit. Explain the definition of a fruit and show them the diagrams of how a fruit is formed. Discuss why fruit tastes good and how animals disperse the seeds after eating fruit.

Instructional Procedure:

I. Seeds: Play a seed guessing game by having students guess the number, size and shape of seeds in the fruit on their table.

1. Ask the kids if they know what kind of seed is in each fruit. Have them make a prediction. Then open the various fruits and observe the different types of seeds that are inside the fruits. Compare and contrast them as to size, quantity of seeds and durability.

2. Questions to ask while they are observing:
How do seeds get dispersed or spread around?
Why do you think fruit tastes so good? Is good tasting fruit part of a plant's survival?
What if fruit tasted badly? Would animals still eat it and spread its seeds?
Why do you think seeds and fruit are plentiful in the summer when animals are active?
Why do seeds look so different?
Why do some plants have one seed and others have many seeds?

If plants have one seed - is it big?
If plants have many seeds - are they small?

II. The life cycle of an oak tree: Travel outside and find oak trees in different stages of their life cycle. Look for an **acorn** (seed), a **seedling** that is less than 6 inches tall, a **sapling** that is more than 1 foot tall, a **young tree** with rough bark but thinner than a **mature tree** that has a larger trunk.

1. Find some acorns. How are they attached to the tree? How do these seeds get moved around from place to place? What animals interact with these acorns? What time of year does an oak tree actively make acorns? Why? These acorns are the fruit and seed of the oak tree. Each child may take one acorn with them back to the classroom.

2. Identify all the oak tree stages. Do the smaller trees look like the bigger trees? Compare the leaves and bark at each of the stages. Are they the same or different?

3. Why are there so many saplings and not as many trees? Explain that large trees take a lot of nutrients and water from the soil. If we had many large oak trees next to each other they would not get enough water and nutrients. Fewer large trees can live in the same space as many smaller saplings.

4. When the tree finishes its life cycle and dies what happens to the dead tree? What happens to this tree in the winter? Why? Explain how a tree loses its leaves and rests until the spring season comes again.