NAME THAT SEED!

Teacher: **Grade Level:** K-6th

Time: 1 hour **Author**: Native Seeds/SEARCH; edited by Michelle Coe

Next Generation Science Standards:	**K-2-ETS1-1**. Ask questions, make observations, and gather information about a situation. **3-LS3-1**. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. **4-LS1-1**. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. **MS-LS4-4**. Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.
Enduring Understandings:	**LS3.B** Different organisms vary in how they look and function because they have different inherited information. Similarities and differences in patterns can be used to sort and classify natural phenomena.
Content Objective:	Students will make observations and gather information to identify different types of seeds. They will form hypotheses and use empirical evidence and scientific reasoning to support their arguments.

Vocabulary	**Materials**
Biodiversity Adaptations Seed Coat	Scientific Journals, Pencil Seeds (free seeds; see **Seasonality** below), Bowls Name that Seed! Prompt Cards (separate download found on this website)

Seasonality: This lesson will work well during any season. Free seeds can be collected through the *Seed Library* at Himmel and Joel D. Valdez libraries in Tucson, AZ. A current library card is all that is required to get up to 10 free seed packets per month.

Monsoon	Autumn	Winter	Spring	Dry Summer
July-Sept.	Oct.-Nov.	Dec.-Feb.	Mar.-Apr.	May-June

Engage: Place two different seed types on a tray or bowl for each table group in the room. Make a list as long as you can of all the ways these objects are similar to one another. Take 1 minute to work with your table group. Now, make a list as long as you can of the ways these objects are different from one another. Take one minute to work with your table group. Have groups share their lists with another table group and use these ideas to introduce the lesson.

Explore & Explain During Each Round of the Game: Place seed varieties in separate bowls at a table (or multiple tables) in the classroom. Each bowl of seeds should be labeled with a number; keep identification key separate. Students will participate in 3 rounds of "Name that Seed!". During Round 1,

NAME THAT SEED!

students will use all of their senses and experiences to try to identify each seed type. As round two comes along, students will receive hints about each seed. During round 3, the answers will be revealed.

Ask students to use their journals or a piece of paper to write #1--__ (depending on how many seed varieties you have). As they visit each numbered seed bowl, they will write down their guess as to what that seed is next to the correct number on their paper.

- **Round 1**: Guiding Questions: Using our experiences, can we identify various seed types and connect each seed to its food source? Do any of these seeds look familiar to any foods you have eaten before? How can we use our senses to observe some of the physical features of a seed? Can these features help us understand what the seed will grow into?
- **Round 2**: Give students time to re-group at the end of Round 1 and compare their experiences and answers with one another. While this is happening, place a prompt card next to each bowl of seeds, providing a few hints to the students. Guiding Questions: The prompt card tells me where the plant grows or how it can be used and eaten. Have I ever eaten these foods before? Do these seeds look familiar to me from the foods I have eaten?
- **Round 3**: Encourage students to re-group and share their predictions and experiences with the classroom while you pass out the final prompt cards. If they haven't already done so, have students make edits to their hypotheses, discuss their findings using supporting evidence, and gather empirical data about their seeds. The answers can be revealed as students walk around the room ***or*** read out for the entire class at one time.

Elaborate: Guiding Questions: What was your method for identifying each seed type? If you are familiar with any of these seeds or plants, how do you use that plant, is it something you have eaten before, and do you know another name for it (i.e., another nickname for the plant or its name in another language)?

Evaluate: Have the students sit with a partner to think-pair-share. Guiding Questions: Why do you think there are so many different types of seeds? (Biodiversity tie-in!) What if we only had ***X*** seed in our world? Would we (and other animals and plants) survive? Why do you think seeds look a certain way or are a certain shape or color? (This can produce a great discussion about how seeds move, their different *seed coats*—protective outer layers which usually indicates how they germinate and what climate they live in—and surprising findings about the color of a seed versus the plant or flower). Do you think all of these seeds will grow in our garden? Do you think they can all grow at the same time and/or during the same season?

What is this seed?

The ripe fruit of this seed varies in size and color. The fruit can be yellow, orange, red, or green. The fruit contains one flat, oblong seed that can be fibrous or hairy on the surface, and which does not separate easily from the pulp.

The fruit of this seed is commonly used in chutneys, pickled, eaten raw, or sprinkled with chili.

This plant is native to southeast Asia.

The answer is
Mango!

The mango is a juicy fruit belonging to the genus Mangifera, consisting of numerous tropical fruiting trees, cultivated mostly for edible fruit.

What is this seed?

These seeds come from a legume tree whose pods were a traditional staple for indigenous peoples of the southwestern desert. The 6 to 8 inch long beans are gluten-free and high in protein, complex carbohydrates, fiber, and minerals. Mature pods can be dried and ground into a sweet, nutritious meal or flour in a hammer mill.

The answer is
Mesquite Beans!

Mesquite beans can be ground into meal that is naturally sweet, it is also extremely effective in controlling blood sugar levels in people with diabetes. Mesquite pods typically begin to ripen in June in Tucson and in mid to late July in Cochise County.

What is this seed?

Ferocactus, meaning "fierce or wild cactus," are always cylindrical or barrel shaped and are usually among the largest cacti of the North American deserts. Native Americans boiled young flowers in water to eat like cabbage and mashed older boiled flowers for a drink. They also used the cactus as a cooking pot by cutting off the top, scooping out the pulp and inserting hot stones together with food. The spines were used as needles, as awls and in tattooing.

The answer is
Barrel Cactus!

Barrel cactus buds typically start to bloom in April with a bright yellow or orange flower. As the flowers wilt away, small pineapple-shaped yellow fruit form. The fruit can be easily removed and eaten.

What is this seed?

This cactus contains fruits that are edible and sold in stores under the name "**tuna**." The tunas are often made into juice or jam. The pads on this cactus are also cooked and eaten as a vegetable called "**Nopalito**." Be careful while harvesting as this cactus and its fruit have spines!

The answer is
Prickly Pear Cactus!

Prickly pear cactus are found in deserts of the American Southwest. Most prickly pears have large spines on their stems and vary in height from less than a foot to 6 or 7 feet. The fruit and pads are food for birds, insects, and mammals such as javelina. They are drought-tolerant, frost-tolerant, and easy to plant and care for.

This tree produces a fruit that has a green-skinned, fleshy body that may be pear-shaped, egg-shaped, or spherical. Usually, the fruit ripen *after* harvesting. The tree does not tolerate freezing temperatures, and therefore is grown primarily in subtropical or tropical climates.

What is this seed?

The answer is
Avocado Tree!

Avocados can be propagated by seed, taking roughly four to six years to bear fruit, although in some cases seedlings can take 10 years to come into bearing. Therefore, many people propagate avocado by grafting to rootstocks.

What is this seed?

This tree survives very well in the extreme cold or extreme heat. During spring, summer, and fall, this tree blooms with pink and purple flowers that attract hummingbirds and other pollinators. Flowers are followed by long, skinny, green seed pods that hang from the tree during winter.

The answer is

Desert Willow Tree!

The Desert Willow tree is native to the U.S. Southwest and Mexico. Their flowers are shaped like a trumpet and have yellow “throats” that serve as a nectar guide to pollinators. The Desert Willow can grow up to 18 inches per year and can grow to over 30 feet tall.

What is this seed?

The leafy greens of this plant are similar to spinach. The seed or grain can be cooked and eaten similarly to oatmeal or popped. This plant grows wild in the summer throughout the Southwest. It has been an important cultivated food in the Southwest and Mexico for centuries.

The answer is
Amaranth!
Amaranthus spp.

The seeds are a popular snack food and sometimes popped and mixed with honey and chocolate. Amaranth grown for its grain usually has tan seeds while amaranth grown for the leafy greens usually has black or red seeds.

What is this seed?

This is a seed you eat everyday, even though you probably didn't know it.

There are many different types of this seed. Some are popped, some are eaten on the cob, and some make great tamales!

The answer is
Corn!
Zea mays

There are many types of corn including popcorn, sweet , dent, flint, and flour. Most corn in the United States is made into a syrup used to sweeten many processed foods. There are lots of varieties of corn – different shapes, colors, etc., and just as many ways to eat it. It is part of the three sisters along with beans and squash. The three sisters are important crops for many Native Americans.

What is this seed?

An important seed for the O'odham people of Southern Arizona.

Grows in the summer monsoon season and requires very little water.

Domesticated in the Southwest and grown here for centuries.

The answer is
Tepary Bean!
Phaseolus acutifolius

Tepary beans are smaller than common beans like pintos and black beans. They are very well adapted to growing in the desert. Their leaves are smaller and close up during the hot day to conserve water. There are many colors including brown, white, black, and speckled. They are high in protein and taste great!

What is this seed?

The seeds are hydrophilic, absorbing up to 12 times their weight in liquid when soaked.

After soaking , the seeds develop a gel-like coating. The "gel" sticks to your stomach making you feel full for longer.

The answer is
Chia!
Salvia hispanica

The word "chia" is derived from the Nahuatl word *chian*, meaning oily. It was just an important of a food as corn for the Aztec in Mexico. It can be found wild in some parts of the Southwest and is becoming common in grocery stores.
It is the seed used to grow the hair on Chia pets!

What is this seed?

Grown in the cooler months in the Southwest.

Ground to make flour for breads, cakes, and cookies.

Something you probably eat everyday.

The answer is

Wheat!

Triticum aestivum

Wheat has been grown in the Middle East for 10,000 years. It was brought to the Southwest by Spanish missionaries who wanted to make communion wafers. Because it grew well here it spread and was incorporated into many traditional O'odham dishes. Wheat's popularity in the Southwest is why we commonly have flour tortillas instead of corn.

What is this seed?

Grown for their beautiful yellow flowers and edible seeds.

Many different shapes and sizes of flowers.

Seeds can be white, grey, black, and striped.
The dark black seeds can also be used to make a purple dye.

The answer is
Sunflower!
Helianthus annuus

Sunflowers were domesticated in what is now the United States. There are wild varieties that grow. They have smaller seeds and flowers.
What is usually called the "flower" on a mature sunflower is actually a "flower head" (also known as a "composite flower") of numerous florets (small flowers) crowded together that form the edible seeds.

What is this seed?

This seed produces a fruit that is not typically eaten for food but rather dried and used to make instruments, bowls, or canteens.

They grow into all different shapes and sizes but the seeds look the same.

The answer is

Gourd!

Lagenaria siceraria

They are related to squash but taste very bitter. They dry to have a very hard thick shell that can be cut or carved.

Gourds are one of the oldest domesticated crops. It is thought that people began selecting and saving seeds to grow different shapes for different tools nearly 10,000 years ago.

What is this seed?

A favorite summertime treat!

The flesh of this fruit is typically red but yellow and white varieties also exist.

Most grocery stores today only carry varieties that have no seeds. But it is fun to eat one with seeds and have a seed spitting contest!

The answer is
Watermelon!
Lagenaria siceraria

An African native introduced to the region by the Spanish in the 1500s. Watermelon seed was rapidly traded northward. Watermelons are commonly grown by Native Americans in the Southwest. Because of their origin from a similarly dry environment they grow very well here.

Fruits vary in size and color of flesh and rind. Seeds are eaten and used for their oil. Seeds can be red, black or tan. There is more diversity than just red flesh and black seeds!

What is this seed?

A favorite summertime treat!

Produces a round or oblong fruit that is with sweet tasting flesh.

A cousin to cucumbers.

The answer is

Melon!

Citrullus lanatus

Most people think there are only two types of melon- cantaloupe and honeydew. But there are hundreds of different shapes, rind patterns, and flesh color. All are delicious!

Melons hail from Africa, a similarly dry climate. Therefore they are well adapted to grow in the Southwest.

What is this seed?

An ingredient in salsa and pasta sauce.

Grown in the summer.

A cousin to chilies and eggplants.

Grown in many different sizes and colors..

The answer is

Tomatoes!

Solanum lycopersicum

Tomatoes were originally domesticated in Mexico and South America. Their seeds and use as a food spread into the Southwest during Spanish colonization.

They are in the nightshade family which also contains chilies, tomatillos, and eggplants.

What is this seed?

A favorite at Halloween!

The fresh, seeds, and flowers can all be eaten.

We often think of the fruits from these seeds as being only orange but they can also be green, yellow, or bluish. The skin can be solid, have stripes, or speckles.

The answer is
Pumpkin!
Cucurbita pepo

Pumpkins were domesticated in North America , possibly as long as 7,000 years ago. Pumpkins and other squash are part of the “three sisters” along with corn and beans. The tree sisters are important Native American crops.

They are one of 4 major squash species . This species also includes zucchini and yellow squash.

What is this seed?

Grown for their leafy greens.

The edible leaves come in many different shapes, textures, and colors.

Common toppings for burgers.

Grown in colder months in the Southwest as it does not like the heat.

The answer is

Lettuce!

Lactuca sativa

Lettuce is most often used for salads, although it is also seen in other kinds of food, such as soups, sandwiches and wraps. And as a burger topping!

Lettuce was first grown in ancient Egypt. First for it oily seeds and then for the leafy greens.

Seeds can be white or black.

What is this seed?

A favorite food to eat with ranch dip or in Chinese food.

Can be eaten raw or steamed

.

It wasn't common in the United States until the 1920s.

The answer is

Broccoli!

Brassica oleracea

Broccoli is part of the same species as cauliflower, kale, cabbage, among other green vegetables called cole crops. Broccoli was selected for its tasty flower head while other types of this species were selected for leaves.

It originates in cooler climates of Europe and best grown in the fall and winter in the Southwest.

What is this seed?

In Asian cuisine, the young fruit are eaten as a vegetable with a taste similar to squash, but more fibrous.

More commonly the mature, dried fruits are used as a bath or kitchen scrubbing sponge.

A small, wild species grows in Northwest Mexico.

The answer is

Luffa!

Luffa spp.

Luffas come in numerous shapes and sizes. They grow on vines that look similar to cucumbers, but the yellow flowers are larger.

To get a sponge, allow the fruit to dry and the peal off the outer skin.