Pecan Fingerprints

Objective
Students will explore pecans with their five senses. Students will compare and contrast their own fingerprints with those of their classmates to find similarities and differences. Students will compare and contrast their fingerprints with the patterns found on pecan shells.

Background
The pecan is a kind of hickory nut native to the US. It originated in the Mississippi River Valley and was a valuable food to early settlers there. Pecans are high in polyunsaturated fat, the kind of fat that is not bad for you. They are also a good source of vitamins, calcium, phosphorus and iron.

Pecan trees like to grow together in clusters, or groves. They can grow from 70 to 100 feet tall, and their branches will spread from 50 to 100 feet wide. Their roots grow deep. Their leaves are dark green, with a lighter underside. They have very little color in the fall.

Pecan trees have two kinds of flowers. One of the flowers produces pollen, and the other one produces the nut. The nuts grow inside a thin, four-part husk. They ripen between October and December. The nuts fall to the ground when they are ripe. Pecan growers harvest their pecans by picking them up off the ground. Sometimes they knock the nuts down with long poles or shake the pecans off the trees with large machines.

There are many different kinds of pecan trees. Some trees have very small nuts. These nuts are hard to crack but very tasty. Other trees have large nuts with thin shells that are easy to crack. These are called “paper shell” pecans. Their shells aren’t quite as thin as paper, but they are much easier to crack than the smaller pecans. No two pecans have the same markings on their shells. Each one is as unique as a fingerprint.

Science
1. Read and discuss background and vocabulary.
2. Provide pecans for students to examine.
   — Students will use their five senses to explore the pecans. What do they look like? How do they taste? What do the pecans smell like?
   — Students will observe how the pecans move. Do they roll?
   — Students will compare the pecans to other nuts. Which ones are heavy/light, sink/float, rough/smooth.
   — Students will compare the patterns on the shells of different pecans.
   — Students will discuss patterns in nature and why pecans have patterns (Camouflage so the seeds have a greater chance of surviving to make new trees.
   — Students will design their own patterns to mimick the camouflage qualities of pecan shells.

Oklahoma Academic Standards

PRE-KINDERGARTEN
Science Process—1.2
Physical Science—2.1,2,3
Social Studies PALS—1.A.1
Social Studies Content—3.3

KINDERGARTEN
Science Process—K.PS2.1; K.LS1-1
Social Studies PALS—1.A.1
Social Studies Content—3.3
COMMON CORE
English Language Arts—K.RI.4; K.L.4,6

GRADE 1
Science —1.LS1.1
Social Studies PALS—1.A.1
Social Studies Content—3.2
COMMON CORE
Language Arts—1.RI.4; 1.L.4,6

GRADE 2
Science —2.PS1.1,2; 2.LS44.1
Visual Art—3.2
Social Studies PALS—1.A.3
Social Studies Content—3.3,4
COMMON CORE
Language Arts—2.RI.4; 2.L.4,6
3. Students will compare their own thumbs with those of their classmates.
   — Discuss the different ways fingerprints are used (to identify missing persons, in crime investigations, etc.)
   — Hand out the worksheets.
   — Students’ fingers should be free of cuts.
   — Students will make prints by rolling their thumbs over an ink pad, then rolling them onto the space provided on the worksheet. They may also cover their thumbs with graphite from the lead of a pencil, press the prints onto cellophane tape, carefully peel the tape from their thumbs and stick the prints onto the worksheets.

4. Each student will grasp a clean glass with one hand. Make sure the print doesn’t get smudged. Sprinkle the print area with iron shavings. Place wide, transparent packing tape over the iron shavings. Lift carefully and stick the tape to a clean sheet of paper.

5. Students will use a magnifying glass to examine the fingerprints.

6. Students will create a Venn diagram comparing/contrasting the pecans and the fingerprints.

English Language Arts
1. Pecans grow in clusters. Divide students into groups.
   — Students will and stand together in “clusters.”
   — Each group will develop a group definition of the word “cluster” (“a number of similar things growing together”).

Visual Art
1. Students will create fingerprint animals, using different colored ink pads and markers.

Social Studies
1. Students will make fingerprint cards.
   — Students will write their full names, dates of birth and the date the card is made.
   — Students will print all fingers of both hands on the cards, if possible.
2. Help students locate the Mississippi Valley on a map of the US to show where pecans originated.
3. — Students will locate Oklahoma on a map of the US. — Students will use directional words to describe the location of Oklahoma relative to the location of the Mississippi Valley.
Extra Reading

Materials
a handful of pecans and other nuts for comparison
inkpad or pencils and tape

Ag Career: Pecan Picker
Pecan pickers provide manual labor for pecan production. He/she plants, cultivates, and harvests pecans; uses hand tools, such as shovels, trowels, hoes, tampers, pruning hooks, shears, and knives. Duties may include tilling soil and applying fertilizers; transplanting, weeding, thinning, or pruning crops; applying pesticides; cleaning, packing, and loading harvested products. The worker may also repair fences and farm buildings, or participate in irrigation activities. Laborers who work with pecans may also drive and control farm equipment to till soil and to plant, cultivate and harvest crops and may perform tasks such as crop baling or hay buckling. He/she may also operate stationary equipment to perform post-harvest tasks, such as husking, shelling, threshing and ginning.
Source: careers.org
unique—one of a kind, matchless. A person’s fingerprints are unique to that individual. The pattern on a pecan shell is also unique.

Make prints of both your thumbs on tape, and stick them here. Then design your own pattern on the pecan shell.

Investigate. Write “yes” or “no” to answer these questions.

1. Can you see a pattern in the lines of your thumb print? ______

2. Are the two prints alike?_____________

3. Can you redraw the pecan pattern and make it a perfect match?__________

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