Subject: Grade 5 Science

Unit: Plants and Life Cycles

Day: 3

Topic: Vascular Seedless Plants

Materials:
- Plants and Life Cycles Day 3 PowerPoint
- Plants and Life Cycles Day 3 Lesson Plan

Lesson objective(s):
- SWBAT describe the life-cycle of spore producing seedless vascular plants.
- SWBAT describe a vascular plant structure
- SWBAT list the three types of seedless vascular plants

ENGAGEMENT

TW show intro/ first slide and ask S to describe the difference between the photos of this slide to last class presentation.

EXPLANATION

Intro slide: observe photos, tell of new features compared to last lesson

Slide 1: Vascular Plants

TW say: Vascular plants are more complex than nonvascular plants because they have transport tissue and specialized structures, and this helps vascular plants to live in a variety of environments. These specialized structures include roots, stems, and leaves. Roots absorb water and nutrients from soil, anchor plants down for stability. Stems contains xylem and phloem, transports water and sugar, gives support to plant. Leaves are where most of the photosynthesis occurs. There are two categories of vascular plants: Seedless and Seeded, which determines the reproduction methods.

Slide 2: Transport Structures Picture

Within the stem of vascular plants are the xylem and phloem, the specialized transport structures. The Xylem transports water and nutrients from the soil from the roots to the leaves, shown with the red arrow is the larger white openings. The Phloem transports sugar made in the leaves to the other parts of the plant, which is shown by the arrow to the smaller blackish circles. This picture is if you cut a stem across (horizontal) and looked at it under a microscope.

Slide 3: Seedless Vascular Plants

The first category of vascular plants is seedless, meaning they do not have seeds or flowers. Seedless vascular plants have transport tissue, which makes them more complex than nonvascular plants. These transport tissues were just stated: xylem and phloem. There are three categories of seedless vascular plants Ferns, Club Moss, and Horsetails. They are like nonvascular plants in the way that they use spores in the process of alternation of generation. Since they use spores, they grow best in damp environments as the spores grow best where the ground is wet.

Slide 6: Seedless Vascular Reproduction
All seedless vascular plants use alternation of generation involving spores. Mature sporophytes release spores that get dispersed by the wind. Each spore may develop to be gametophytes, which has male and female gametes. The male gamete needs water to travel to the egg, to fertilize it and make a zygote. The zygote grows into a sporophyte, and the process starts again. As a reminder: Gametophytes are haploid and sporophytes are diploid.

Reproduction picture

Definition of plant germination: the growth of a new plant (embryo)
Definition of plant fertilization: combination of gametes to create a new plant

Slide 7: Ferns

TW have students take notice of the background; ask them to describe the appearance of a fern.
TW say: Ferns are vascular because they have true stems, roots, and leaves, the stems are mostly underground for nutrient absorption and stability. TW read the last two points. TW point out the spores grow on the fern leaves and look like rust colored bumps

Slide 8: Club Mosses

TW read points off slide and have students take notice of the structure of the club moss as seen in the background photo. Note that these look very different than nonvascular mosses.

Slide 9: Horsetails

TW read slide points, emphasizing on the 2nd & 3rd bullets. Define silica (a hard, unreactive, colorless compound that occurs as the mineral quartz and as a principal constituent of sandstone and other rocks.) S may think silica to be cilia which is finger like projections. When something packaged needs to stay dry they put silica bead (clear small beads) in with the package.

Slide 10: Class Disc Club mosses are different because they are vascular (specialized structures), also meaning they have structures to help them grow larger than nonvascular mosses. They even look different. The xylem is larger because water is evaporating from the leaves quicker than the plant needs sugar so it needs to transport more material than the phloem
EVALUATION SW draw the life-cycle of a fern