Putnam Soil and Water: 4th Grade Programs

The following programs are designed for 4th grade classes and align to the state standards. All materials are provided and programs are free. To schedule a program email Bonnie Brooks at bonnie.brooks@putnamcountyohio.gov and include which program, times and dates that you are requesting.

4th Grade: 4.ESS.1: Earth's surface has specific characteristics and landforms that can be identified. Earth's surface can change due to erosion and deposition of soil, rock or sediment. Catastrophic events such as flooding, volcanoes and earthquakes can create landforms. Beginning to recognize common landforms or features through field investigations, field trips, topographic maps, remote sensing data, aerial photographs, physical geography maps and/or photographs are important ways to understand the formation of landforms and features. Common landforms and features include streams, deltas, floodplains, hills, mountains/mountain ranges, valleys, sinkholes, caves, canyons, glacial features, dunes, springs, volcanoes and islands. Connecting the processes that occur to the resulting landform, feature or characteristic is emphasized. 4.ESS.2: The surface of Earth changes due to weathering. TOPIC **3: 4.ESS.3: The surface of Earth changes due to erosion and deposition. 4.LS.1: Changes in an organism's environment are sometimes beneficial to its survival and sometimes harmful**. **Develop a plan to help return an ecosystem back to its original state.**

1. Stream Table: This can be a formal or informal session. Students experiment with 4' stream table with water and ice to see how landforms are created. The table can be set up outside or inside. Schools may borrow it for a few days so kids can utilize it on the playground or during class time. Constructive and destructive forces will be noted and what those forces create. Students can simulate catastrophic events and see how the land is changed by them.

Small stream boxes can be utilized with teams of students with a formal experiment where they determine erosion caused by amount of water and height of a hill. The standard that addresses the suggestion to, "Use a streambed to conduct an investigation to determine how erosion and deposition impact organisms in that ecosystem" can be explored.

2. Augmented Reality Sandbox: Includes 1 or 2-day program. On day 1, the AR sandbox will be utilized to teach kids what topo lines are, how they are used and what they tell us. On day 2, they will have their own box of sand and topo map. They will replicate the given topo map in their mini sandbox and then check it in the AR box to see if it's correct. They will also look on 3D relief maps to answer questions about topo maps. Ideally the box would be put in a common place where multiple classes may use it. A school may reserve the sandbox for a week so all classes might experience it at their convenience. We will be happy to customize the time and lessons you would like to utilize with this resource.

3. Break Out Boxes: Weathering and Erosion. Students participate in a team to solve problems to break open 5 locked boxes that test their understanding on weathering and erosion.

4. Fossils: This is a lab in which students rotate between 4 stations. Students learn about molds, casts, permineralization and discover what Ohio animals lived in different time periods by looking at actual Ohio fossils. They will make a mold and create a cast model of their creature. Before starting, we will look at an Ohio map and compare it with geologic time periods.

5. What the Landform?!: This is an intro to landforms (with a look at 2 sedimentary rocks limestone and sandstone) and then delve into a challenge for student teams to make a landform from kinetic sand. Other teams will then attempt to guess which landform each team created. This couples well with the sand table and/or AR Sandbox.

6. Monarchs & Milkweed: Learn about this amazing insect and its host plant. Play a game to understand their migration and why the severe drop in their numbers has occurred since 1990. We will make milkweed seed bombs the kids can take home or "plant" on their school grounds. When their plant grows, they can identify and record species found on plants, including eggs and caterpillars and see the changes one simple plant can make to its environment (common milkweed plants support over 450 species of insects).

7. Make a difference: Students examine wildlife maps of Ohio and determine what has happened in our state in regards to human actions over the past 200 years. Then we play a game called Oh Deer! to understand the needs and challenges of all living things. Students learn what carrying capacity and limiting factors are. As an extension, students can investigate their school grounds and determine what life it might support. They brainstorm ideas and develop a plan to increase the biodiversity and value of the school space.

8. Change the World: The Putnam Soil and Water office can help guide students in writing grants to obtain funds to develop their plans on school grounds.