

Planning Guide for *Exploring Soils*

Teaching Plans	Specific Curriculum Outcomes	Components	Materials	Literacy Place Connections
How Are Soils Different? Students will begin to explore soil and use scientific terminology when communicating their understanding.	Skills [GCO 2] • 1.0 • 2.0 • 4.0 STSE/K [GCO 1/3] • 3.0	• Student Magazine, pages 2–7 • Anchor Video: <i>Exploring Soils</i> • BLM <i>Venn Diagram</i> • IWB Activity 1	• students' Science Journals • variety of soil samples • document camera (optional) • sealable plastic bags • small digging tool, such as a trowel or spade, small shovel, an old spoon, or a measuring cup • variety of tools, such as magnifying glasses, tweezers, and small paintbrushes • egg cartons	
What Is Soil Made of? Students will examine the composition of soil by looking at magnifications and using special tools.	Skills [GCO 2] • 6.0 STSE/K [GCO 1/3] • 5.0	• Student Magazine, pages 8–9 • BLM <i>Sense Chart</i> • BLM <i>Foldable Template</i>	• egg carton soil samples or the bagged soil samples from <i>How Are Soils Different?</i> (pages 11–19) • students' Science Folders • paper plates or clean Styrofoam trays • magnifying glasses • small paintbrushes • straws • small sponges • students' Science Journals • tweezers • graduated cylinders • spray bottles • measuring cups • strainers • very fine mesh screens, window screen, or colanders • funnels • jars • sifters or sieves • trowels • several wide-mouth containers • supply of earth from a garden (not potting soil) • elastic bands or duct tape • plastic water bottle (1 per group) • samples of soil • handmade funnel made of paper • pencil and coloured pencils • Lego pieces (assorted colours) • variety of craft materials (e.g., string, twine, buttons, glitter, markers, white glue, tape, construction paper, clean pebbles, card stock, or bristol board) • container (e.g., a glass jar, a tumbler, a fishbowl, or a small terrarium) • spruce or fir needles, leaves, twigs, and/or compost • digital camera (optional)	<i>Dr. Bufflehead Explores Dirt</i> (Guided Reading, Level L)

Teaching Plans	Specific Curriculum Outcomes	Components	Materials	Literacy Place Connections
How Does Soil Change When It Gets Wet? Students will explore through investigations how the properties of soil change when it is moistened. They will make observations, compare data, analyze the results, and discuss.	Skills [GCO 2] • 8.0 STSE/K [GCO 1/3] • 7.0	• Student Magazine, pages 10–13 • <i>The Sandcastle Contest</i> (Read Aloud) • IWB Activity 2	• students' Science Journals • basin or small wading pool with sand • small and large yogurt containers • spray bottles • variety of different soil samples • basins of soil (1 for each group) • protective plastic sheeting • selection of cookie cutters • clay soil • variety of tools (e.g., sponges, eyedroppers, watering cans, measuring cups, paper towels, lamps, hair dryers) • funnels • jars or graduated cylinders • tissue paper • bowls • spoons or paint stir sticks	
Does Soil Absorb Water? Students will investigate the water-holding properties of different soil samples and make conclusions about which mixtures absorb the most water.	Skills [GCO 2] • 10.0 • 11.0 STSE/K [GCO 1/3] • 9.0	• Student Magazine, pages 14–17 • BLM <i>Which Soil Absorbs Water the Best?</i> • <i>What Is the Inquiry Process?</i> poster	• sponges • graduated cylinders • containers of water • buckets • paper towel tubes • stopwatch, smartphone, or watch with a second hand • different samples of soil including sand, clay, and also some loam samples with varying levels of sand, silt, and clay • water • measuring cups • graph paper • round objects that represent different-sized particles (e.g., small beads, marbles, super balls, tennis balls) • funnels • container or jar • bristol board • spoons or scoops • paper towel • fine cotton cloths or pieces of fabric • plastic containers • electric fan, hair dryer, heat lamp, or oven • four to six clear jars • mixtures of soil (potting soil, peat moss, potting soil and gravel, gravel, soil from the schoolyard) • beakers filled with water • few drops of food colouring • students' Science Journals	

Continued on next page...

Planning Guide for *Exploring Soils* (continued)

Teaching Plans	Specific Curriculum Outcomes	Components	Materials	Literacy Place Connections
Soil and Living Things Students will investigate how living things affect and are affected by soil, and develop their understanding of composting.	Skills [GCO 2] • 12.0 • 14.0 STSE/K [GCO 1/3] • 13.0	• <i>Underneath the Sidewalk</i> (Read Aloud) • Student Magazine, pages 18–21 • IWB Activity 3 • IWB Activity 4 • <i>What Is the Inquiry Process?</i> poster • IWB Activity 5	• students' Science Journals • clipboards and paper (optional) • clear container or aquarium • nutrient-rich soil • 100–500 live worms (e.g., red wigglers) • food scraps (e.g., cut-up banana peels, orange peels, apple cores, grape stems, etc.) • black paper • 2 L bottles (1 per group) filled with gravel and soil (added using a funnel) • 20–30 live earthworms, insects, spiders, or grubs • bristol board • non-toxic (edible) coloured sand (optional) • materials for making musical instruments (optional)	<i>Explore! Magazine: Nature Up Close</i> ("The Forest Man of India," pp. 21–23, Shared Reading – Nature Watch Inquiry Unit)
How Does Moving Water Affect Soil? Students will observe and explore how different samples of soil react to moving, or poured, water.	Skills [GCO 2] • 16.0 • 17.0 STSE/K [GCO 1/3] • 15.0	• Student Magazine, pages 22–25 • <i>What Is the Inquiry Process?</i> poster	• paint tray or shallow basin • large yogurt or plastic ice cream container • small yogurt container • sand • watering can, water • modelling clay • variety of materials such as spray bottles, squeezable water bottles, straws, watering cans or perforated yogurt containers, liquid measuring cups, graduated pitchers, buckets • variety of soil samples (sand, clay, pebbles) • piece of wood (i.e., plank) • cardboard carton • students' Science Journals • various materials such as yogurt containers, masking tape or duct tape, craft sticks, plastic berry baskets, Styrofoam trays, alfalfa sprouts • poster board (optional) • video camera, digital camera, or tablet (optional)	

Teaching Plans	Specific Curriculum Outcomes	Components	Materials	Literacy Place Connections
How Do Humans Use Soil? Students will explore the many ways in which soil is used to enrich our everyday lives. They will conduct research, create and complete a chart, share information, discuss their ideas, and communicate their findings.	Skills [GCO 2] • 12.0 STSE/K [GCO 1/3] • 18.0	• Student Magazine, pages 26–29 • IWB Activity 6	• variety of small objects made from soil (e.g., pottery vase or bowl, clay flowerpot, empty medicine container, brick, tile, glass jar, picture of fruits and vegetables or some “play” foods made of wood or plastic, twine, pair of cotton socks, potted plant, peat pots/ pellets) • students' Science Journals • old magazines or pictures from the Internet • digital camera or tablet (optional) • coloured pencils or markers • tactile items, such as small samples of string, yarn, fabric, pottery and jewellery, tape, or small snack bags (optional) • paintbrushes • soil samples (sand, silty loam, clay loam, potting soil, humus, or organic materials) • water and white glue (or other binder) • art paper	
Caring for Soil Students will investigate why it's important to protect the health of soil. They will listen, research, discuss, and discover ways in which they can take action to keep soil clean.	Skills [GCO 2] • 12.0 STSE/K [GCO 1/3] • 13.0 • 18.0	• Student Magazine, pages 30–31 • IWB Activity 7 • IWB Activity 8 • BLM <i>Soil Footprint</i> • IWB Activity 9	• sample or photo of contaminated soil • students' Science Journals • materials for bulletin board display (e.g., construction paper, coloured pencils, markers, and pictures from old magazines or the Internet— optional)	