Celebrating Earth Week: Elemental Connections

A collection of ideas, activities, and resources for exploring and celebrating our connections to the Earth's elements during Earth Week

by Deanna Fry

Grades levels: K-6

Subject areas: multidisciplinary

Key concepts: identifying, exploring, and connecting with the four natural elements and the spirit of life across the curriculum during Earth Week

Location: outdoors and indoors

Time: 5 days during Earth Week

Photographs by Deanna Fry

Making real and heartfelt connections to nature is crucial for our survival. It is especially important in this age of virtual reality when so many people — children included — have become estranged from the natural environment. This five-day unit, "Celebrate Earth Week," is a collection of ideas, activities, and resources for recognizing, exploring, honoring, and celebrating our connections to the Earth during Earth Week. The unit offers five daily themes: the four natural elements — water, fire, earth, and air — and the spirit of life. This elemental approach is based on the traditional medicine wheel teachings common to many aboriginal traditions, in which fire, earth, air, and water are recognized and celebrated as foundations of life. Each day, short thematic excursions outdoors give students opportunities to make connections with these elements in nature, while indoor activities invite exploration of the important roles these elements play in our modern world. The themes may be placed in any order. I often arrange them so that "Earth" day falls on Earth Day itself (April 22).

The activities outlined for each theme day should be considered open-ended suggestions to select from and to adapt or extend in any way you like. They are just beginnings, places to start, rather than detailed lesson plans. You may wish to augment some of the activities with additional resources. This thematic approach to Earth Week could be used with one class, one grade level, or the whole school. Consider, perhaps, a giant wall chart of the theme days, with their meanings simply stated and students' work displayed in a prominent place in the school. Daily morning announcements introducing the theme days and concepts are a way for the whole school to recognize Earth Week. In all, simplicity is the key. There is no need to travel far or to be extravagant. We need only open ourselves to the natural world around us and celebrate.

Water (Monday)

All living organisms use water in one way or another, and our common need for this important element unites us. We can survive for many days without food but not without water. Many people in the world must go to great lengths to collect water, and often the water they rely on is not clean. It is important to convey an appreciation for the abundance of clean water that we have in North America and the need to conserve the world's supply of fresh water.

A simple way to introduce the water theme by taking your class down to the fountain for a drink. Ask your students to think about where the water came from and the route it took to get to the fountain. Back in the classroom, demonstrate how much of the world's water supply is fresh and clean (that is, drinkable):

Materials: water, a small bucket, a 1-liter beaker, a 100-milliliter graduated cylinder, a small dish, and a 10-milliliter eyedropper or a glass stirring rod

Procedure:

1. On a world map or globe, direct students' attention to the amount of water as compared with the amount of land on the Earth (water covers about 75 percent of the Earth's surface).

2. Pour 1 liter (1,000 milliliters) of water into the 1-liter beaker and explain that this amount represents all the world's water.

3. Pour 30 milliliters of water from the 1-liter beaker into the 100-milliliter graduated cylinder, explaining that this represents all the world's fresh water, about 3 percent of the total amount of water on Earth.

4. Tell students that almost 80 percent of Earth's fresh water is frozen in ice caps and glaciers (point these out on a map or globe), and then pour 6 milliliters from the 100-milliliter cylinder into a small dish. Explain that this amount of water represents the non-frozen fresh water and that only about 1.5 milliliters of this is surface water; the rest is underground.

5. Use the eyedropper or glass stirring rod to put a single drop (0.003 milliliters) in the bucket, making sure students are quiet so they can hear the drop hitting the bottom of the bucket. Explain that this represents the fresh, unpolluted water available for use, about 0.00003 percent of the total!

This concrete demonstration[1] is an effective way to stress the value of clean, drinkable water. Go on to tell students that North America has about two-thirds of the world's fresh surface water and show them the Great Lakes on the map or globe. Reveal that North Americans use more water per person than people anywhere else in the world and pay the least for it!

The rapid evaporation of water paintings on the outside wall of the school is a visible demonstration of the water cycle in action.

Allow time for reflection on and discussion of these facts, and for the feelings and ideas they may invoke. Have students do this as a whole class, in small groups, or in pairs. Prompt them with the following questions:

- Do we value and appreciate water or do we take it for granted? Do you?
- How do we waste water? How do you waste water?
- How can we conserve water? How can you conserve water?
- How do people in other parts of the world get fresh water? Is it freely available?
- Imagine living in a place where fresh water is scarce and people have to carry it a long way. How would having to do that change your habits and your attitude toward water?
- Will you change the way you use water from now on?

You may want to have students complete a journal entry or draw or write about what they have just learned. Some teachers have students make a "personal water pledge" in which they outline and agree to perform water conserving behaviors and actions. Creating water collages is also a good follow-up activity. Old *National Geographic* magazines are an excellent source of photographs of water and humans using water around the world.

Switch gears by having students sing any songs they might know about water. Lead younger children in singing a round of "Down by the Bay" or "Listen to the Water" and then have them act out the basic stages of the hydrologic (water) cycle. Begin by having children pretend they are light, fluffy clouds moving across the sky. Tell them to become darker, heavier, and slower moving as they collect more water vapor from the air (condensation). Next they can be the rain falling down to the Earth (precipitation) and collecting in rivers and lakes. Finally, explain that when the sun comes out and shines on the water, they will travel back up to the clouds again (evaporation). Repeat the cycle several times, varying the types of rain (e.g., gentle rain, downpour, thunderstorm). Have children draw their own versions of the water cycle or label and color one you have prepared.

Older children can also study the water cycle. Discuss the various stages, paying attention to the changes of state that occur at each stage, such as the change from liquid to water vapor (evaporation) and the change from gas to liquid (condensation). Have students draw and label their own water cycle diagrams or create a model of the water cycle, either on their own or with a partner. For older students a discussion of watershed principles, including surface runoff, infiltration, ground water, and aquifers, is appropriate. Point out that wetlands operate as natural filters to purify water and that they are disappearing at an alarming rate due to human development. Discuss North Americans' use of potable water for all their water needs (washing, flushing, watering lawns, industry), and then look at the processes we use to purify water. Demonstrations using sand, charcoal, or other materials that function as filters help students see the process at work. Compare the taste of tap water, spring water, and distilled water, vote for a favorite, and graph the results.

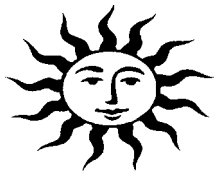
Students of all ages can go outdoors for a water walk to a nearby creek, stream, lake, or puddle. Help students place this body of water in the larger context of the water cycle discussed earlier. Today is your lucky day if it happens to be raining! If a water walk is not suitable, take some clean paint brushes and a few buckets of tap water outside. Use them to paint masterpieces on the school wall and observe the water evaporate from its surface. Experiment with waterpainting in both sun and shade and compare rates of evaporation.

Finally, play some relaxing water music, such as recordings of waves, waterfalls, rain, or a babbling brook. Have students relax, close their eyes, and think of a special or fun time they had near water, perhaps at a cottage, in a pool, or on a beach. Distribute paper and have students draw to the music or share their stories orally before recording them in written, pictorial, or poetic form. An excellent finale is to create a class water book or decorate a bulletin board or hallway with the water stories, poems, and illustrations.

Variations: There are many avenues for exploring water with your class. Other topics that could be used as entry points are:

- the role of water in weather and climate
- the three states of water: solid, liquid, and gas
- aquatic life in salt and fresh water
- economic and environmental issues related to fishing and water sports
- human uses of water, such as for drinking, transportation, recreation, industry, and hydroelectric power

Fire (Tuesday)



The sun and the energy it provides are essential to life on the planet. "Fire" energy from the sun is our basic fuel. It is at the root of the food chain and is the initial source of all our energy resources.

Begin by reading a story, legend, or myth about how the sun came to be, or about the cycle of day and night or the seasons. Some examples might be the Greek myth of Demeter and Persephone, or stories such as "How Spider Stole the Sun" (Caduto and Brushac, *Keepers of the Earth*) and "Why Birds Sing in the Morning" (Terry Jones, *Fairy Tales*). Discuss the importance of sunshine in our lives. Brainstorm ideas for new and different versions of creation stories that explain the sun or day and night, and have students make up their own creation stories. Younger students could illustrate and tell or act out their stories informally, while older students could write and publish their stories. Creating an illustrated class collection of sun stories is an enjoyable activity.

Demonstrate the scientific explanation for day and night and the seasons by having one student hold a flashlight (sun) and having another student slowly rotate a ball (Earth) between his or her two hands while walking in a circle (orbit) around the sun. Encourage older students to compare the scientific explanation with the mythological ones.

Songs or other works of art related to the sun are age-old and seem to come quite naturally to children. To begin, primary students could sing "You Are My Sunshine" or Raffi's "Mr. Sun," while older students could be introduced to the Beatles by listening to "Here Comes the Sun." Invite all students to create their own artistic interpretations of the sun. Provide a wide variety of materials, such as paint, paper, yarn, fabric scraps, and wallpaper. It is very effective to display all the suns together as a "quilt" on a bulletin board or hallway wall.

Introduce the theme of fire in science class with a study of ecosystems and the food chain. Begin by showing students an orange and then sharing orange sections or slices (other fruits could be used but do not represent the sun as concretely as an orange does). Tell students that they are eating energy from the sun, and discuss how this is true: the sun's energy is made into food for the plant through photosynthesis and stored in the fruit for the purpose of self-propagation. People then pick the fruit and eat it, digesting it and using it as energy for their own growth and activity. This leads naturally to the concept of food chains and food webs in ecosystems: the sun's energy enables plants to grow, herbivores eat plants, carnivores eat

herbivores, and so on. Examine a local food chain to see this energy flow at work.

Take your students outdoors to make a personal connection with the concept of food chains. Go for a walk around your school community to identify various life forms and discuss how they depend on the sun and one another. (Although the walk may be only on pavement and patches of dirt, and you may see only weeds, ants, birds, and snack leftovers from recess, the walk will still create a sense of personal relevance.) As a follow-up to your walk, students can create a pictorial presentation of a local food chain. This can vary from a drawing of what they just saw to researching information to map out a food chain.

Variations: Many other approaches to the theme of fire may be found in topics related to the role of fire and the use of energy in human society. Some examples are:

- fire for warmth/cooking/survival: stories of how humans got fire in the first place, the necessity of fire for human survival, life without modern energy technology (e.g., in developing countries or during pioneer days in pre-industrial North America); solar cooking experiments
- the sun as the basis of the energy chain: the role of the sun in producing fuels such as wood and fossil fuels for fire/energy production; nonrenewable energy sources and their environmental impact (e.g., air pollution, greenhouse effect); renewable energy and conservation

Earth (Wednesday)

The earth element is perhaps the easiest for students to connect with because it surrounds us in such a concrete way. We see, smell, and feel it, and whether indoors or out, natural or human-made, everything we come into contact with is of the Earth.

Begin Earth Day with a creation story that explains how the Earth came to be. Such stories, told all over the world, both shape and reflect a culture's values, attitudes, and relationship to nature, often suggesting the stewardship role to be played by humans. Read or tell the creation story of North American aboriginal peoples "The Earth on Turtle's Back," or "Turtle Island" as it is sometimes known (Caduto and Bruchac's *Keepers of the Earth* presents one variation of this story). The many animal roles and the repetitive pattern of this story make it ideal for dramatic re-enactment, and primary students love to make masks and costumes to use in the play. Older students may read creation myths from different cultures to compare and contrast their explanations of nature and the guidelines they provide for human conduct. Explore with older students the scientific theories of how the Earth came to be.

Bring the Earth focus to the present by going outdoors to explore the school and neighborhood terrain. Have students notice what covers the ground and what grows out of it. Try to find a place where the cycle of birth, growth, death, and decomposition is apparent. This may be a wooded area that has rotting logs or patches of last year's leaves on the ground. Point out how your chosen example illustrates the circle of life: for example, seed, sapling, mature tree, dead tree, fallen trunk, decaying log, soil. Explain that animal remains also go through the process of decomposition and that this is how death renews life in nature. Point out the various components of the soil — humus from decomposed plant material, and stones, pebbles, and sand, the results of rock erosion. You may want to have students carefully collect fallen treasures for an art lesson or pick up a rock to use later for the "Dancing Rock Song." Back in the classroom have students follow up these activities by writing about or drawing, labeling, and coloring a picture showing the cycle of birth, growth, death, and decomposition.

Another important Earth topic is the use of natural resources by humans. Have younger students list or draw some everyday items and then discuss where their components came from (e.g., paper from trees, wool from animals) and point out the basic steps in their manufacture. Older students can look in more detail at the specific natural resources used, as well as the energy consumed at various stages in the production process. Transportation, packaging, and waste management can also be explored in relation to their impact on the Earth. Encourage students to compare their material standard of living with that of children from other parts of the world. (*National Geographic* magazines are useful resources again here.)

Planting seeds is a terrific way to extend this theme and make a lasting impression on students. Chart or keep a log of plant growth over time, or experiment with different seeds or soil types. April is a great time for planting, and the seedlings started in the classroom on Earth Day can be transplanted to a school garden or taken home later in the season.

End the day with the "Dancing Rock Song," a favorite with children of all ages (see sidebar).

Variations: Other approaches to the Earth theme could be made through:

- exploring the geological and human history of the local landscape: soil and rock composition, the formation of landforms, archeological finds, the history of land use and farming techniques

- studying native plants and animals of your region
- considering the negative effects of some human activities on the Earth (e.g., soil and groundwater contamination from industrial processes, mining, and landfills; habitat loss due to development), and ways to reduce our impact on the Earth (e.g., starting a recycling or composting program, creating habitat for wildlife)

Air (Thursday)

Air is somewhat of a mystery for students because it is far less concrete than the other elements. Made up of invisible gases, air is elusive even though it surrounds us. To introduce the theme of air to younger children, have them sing this simple song to the tune of "Frère Jacques":

You can't see it, you can't see it,
But it's there, everywhere.
It fills up balloons,
It takes up space,
It is air, it is air.

You can't see it, you can't see it,
But it's there, everywhere
It makes things move,
When it blows
It is air, it is air.[2]

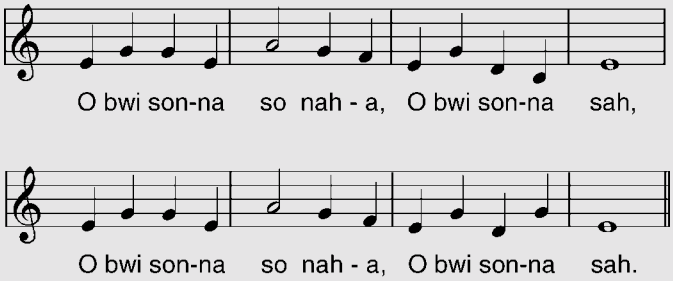
New examples of what air is like and what it does can be substituted for the third and fourth lines as the song is repeated. To introduce the topic of air to older students, you could use the classic riddle "What is everywhere, yet nowhere to be seen?" Have them make up and exchange their own riddles about air.

Investigate air as a medium of transport. Leaves, insects, pollen, seeds, airplanes, birds, and even human voices travel through the air. Have students make scrap-paper airplanes, kites, grocery bag parachutes, or pipe cleaner bubble-blowing wands. Take everything and everyone outside (or on rainy days to a large indoor space) and allow time for flying and blowing bubbles. Encourage students to notice how air moves other things when it blows as wind.

Circumstances permitting, have students sit or lie back to watch clouds or treetops move with the air currents, and to feel the wind playing on their own skin. Remind them that air is as much a part of our inner world as it is of our outer world, that air is at work within them every moment of their lives. Have them take long, deep breaths of fresh air. Explain how all animals and plants are connected through the oxygen/carbon dioxide cycle: animals, including humans, inhale oxygen and exhale carbon dioxide, while plants take in carbon dioxide and release oxygen. Even young children are fascinated by this example of interdependence in nature if it is explained in simple terms, such as "Animals breathe in what plants breathe out and plants breathe in what animals breathe out."

Back indoors, older students might undertake a more in-depth study of science topics such as local and global wind currents, the oxygen/carbon dioxide cycle, air as a transportation medium, or the role of wind in weather and climate. Younger students might draw

The Dancing Rock Song



Instructions:
Ask the students to select a medium-sized rock and sit in a circle on the ground with their rocks in front of them. Teach the song, and then add a clap of the hands on the "0" in the phrase "0 bwi sonna." Then have the singers tap the ground on the "0" and their left knee on the syllables "so" and "sah." Then have them tap the ground in front of them on the "0" and the ground in front of their neighbor to the left on "so" and "sah." Finally, have students pick up the rock in front of them on "0" and set it down in front of their neighbor to the left on the syllables "so" and "sah." The rocks will dance around the circle.

pictures of or discuss things that travel in air. All students could write stories, poems, songs, or raps about air and present them either individually, with a partner, or as a small group. Follow up with a story about the wind, such as *Millicent and the Wind* (Robert Munsch) or "The Wind Ghost" (Terry Jones, *Fairy Tales*).

End the day by playing soft, relaxing music and leading students in relaxation or breathing exercises so that they can feel the air flowing inside them. Draw attention to the calming effect of deep breathing, and encourage children to breathe deeply whenever they think of it. Awareness of one's breath promotes self-knowledge and self-control and helps to bring home the message that air is part of us.

Investigating air as a medium of transportation.

Variations: Other approaches to the theme of air could include explorations of:

- air in relation to weather (atmospheric pressure, the jet stream, tornados and hurricanes)
- human uses of air (e.g., transportation, pneumatics, music, wind power) and the impact of some of these uses (e.g., air pollution)

Spirit of Life (Friday)

Defining and getting in touch with the spirit of life can also be challenging and elusive. Like air, the spirit of life is invisible. It is something one feels deep inside. Think of a time when you were out in nature and saw something that made you stop dead in your tracks, spellbound by the force of its uniqueness, strength, or beauty. This is an experience of the spirit of life, when part of you connects with and recognizes a similar part of someone or something else, whether it be a chickadee landing on your hand for a seed or a mountain glimpsed for the first time.

Begin celebrating this final theme by having students sit together in a large circle knee to knee. Explain that the focus for this last theme day, the spirit of life, is not so much something you think about with your brain as it is something you feel in your heart. Give examples of times when people might feel a special connection with nature, such as when they are watching a beautiful sunset, encountering a wild animal up close, seeing the morning mist rising in a field, noticing the frost patterns on an icy window, jumping into cold water on a hot summer's day, smelling the fresh air, finding a special rock on the beach, or even loving a family pet. Encourage students to think about and remember their own experiences of feeling the spirit of life. Conduct a "community circle" in which students relate their experiences as they pass a talking stick or other item from person to person, each saying, "I felt the spirit of life when ...."[3] Once everyone has spoken, ask students whether they have any questions for one another. Once they have asked and answered the questions, have students consider and discuss what was similar about all the responses during the community circle. Then ask students to consider what was different. Follow up the community circle with a drama activity in which individuals or small groups re-enact in mime or tableau one of the experiences shared earlier while the rest of the class guesses what is being portrayed. Drawing or writing about personal experiences of the spirit of life is another good follow-up activity.

End the lesson with a quiet time during which students sit or lie comfortably with the lights dimmed and soft relaxation music playing. Encourage them to breathe deeply and relax their entire bodies, using gentle reminders and positive reinforcement every few moments. Ask these questions, pausing between each one, to extend the exercise into a creative visualization:

> *Imagine you are in a beautiful, natural place right now. What is it like? What is the land like — flat, hilly, mountainous? How does the air feel — is it hot or cold, dry or damp? What colors do you see there? What sounds do you hear — the wind blowing, water flowing? Are you alone? Are there animals, trees, plants, or flowers? How does it feel to be there?*

Allow time for students to explore the inner world they have created. Then slowly guide them back to their immediate surroundings by having them wiggle their fingers and toes, hands and feet, arms and legs, and, finally, stretch their entire bodies. Depending on how the session went, you may want to give students time to express their visions orally or through drawing or writing.

Make the last outdoor excursion a celebration of all that your students have learned during the week. Point out the interconnectedness of water, fire, earth, and air: all living things on the planet are united in their need for these elements. Share highlights of the week and reinforce the elemental nature of water, fire, earth, and air; all these components are necessary for life to exist on Earth. Encourage students to use all their senses and to look high and low as well as at eye level while they are walking. Have them notice and appreciate whatever nature provides in your surroundings. Breathe deeply, and remind students that we breathe the same air expired by plants and exhaled by animals. Hug a tree, watch the clouds, count some birds or ants, smell the grass and the soil beneath it. Take a micro-walk by kneeling down and following a meter-long piece of string finger by finger, perhaps with a magnifying glass. Take out a piece of white fabric about one meter square, scoop some dirt or leaves onto the middle, and spread them out. Have students observe closely to see the tiny organisms that begin to move about. Use your imagination on this final walk outside, and let the spirit of life move you and your students!

Back indoors, conclude by brainstorming or webbing all the life forms noticed on the walk or by having students express their experience of the spirit of life through creative dance, poetry, songs, or story writing.

Finally, have students consider the roles that water, fire, earth, and air play in life on this planet. Allow time for students to reflect on all that they have explored and discovered during their celebration of Earth Week. Provide chart paper, markers, and pencil crayons to partners or small groups and have students brainstorm or create a mind map of their week of experiences and learning. End with one final community circle in which students share what they feel thankful for. Remind them of how important nature is and how important it is for us to make real and heartfelt connections with the natural world around us. Urge your students to continue to make these important connections to nature for the rest of the year — and for the rest of their lives.

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Notes

1 This demonstration of the distribution of water is adapted from the activity "A Drop in the Bucket" in Alan S. Kesselheim et al, *WOW! The Wonders of Wetlands,* Environmental Concern and The Watercourse, 1995, pp. 158-9.

2 From Gail Bittinger and Jean Warren, *Environmental Songbook,* Warren Publishing, 1990.

3 This activity is adapted from Jeanne Gibbs, *Tribes: A New Way of Learning and Being Together,* Center Source Publishing, 1987.

Resources

Earth Week resources

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