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DEAR EARTH, HOW CAN WE HELP?

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WELCOME

When I was in college, I stumbled across a simple verse that began, "If the Earth were only a few feet in diameter." I can't remember where I found it, but I kept a copy of it for decades, taking it out of the file every time I moved and rereading it. It's as relevant today as when it was written in 1975. I get chills every time I read it. And I can't help but believe it is true.

When something is seen as precious, people will do everything in their power to protect it. Well, Earth is precious, so let's do everything we can to help it. Nurturing a sense of protectiveness about our home planet is what this issue is all about. It is something that is important to every living being on Earth. In fact, it might be the most important thing.

DeeDee Hughes

Editor, Living Education

IF THE EARTH WERE ONLY A FEW FEET IN DIAMETER BY JOE MILLER

If
the Earth were only
a few feet in diameter, floating a
few feet above a field somewhere,
people would come from everywhere to
marvel at it. People would walk around it,
marveling at its big pools of water, its little pools and
the water flowing between the pools. People would
marvel at the bumps in it, and the holes in it, and they
would marvel at the very thin layer of gas surrounding it and
the water suspended in the gas. The people would marvel at
all the creatures walking around the surface of the ball, and at
the creatures in the water. The people would declare it
precious because it was the only one, and they would protect
it so that it would not be hurt. The ball would be the
greatest wonder known, and people would come to
behold it, to be healed, to gain knowledge, to know
beauty and to wonder how it could be. People
would love it, and defend it with their lives,
because they would somehow know that their
lives, their own roundness, could be
nothing without it. If the Earth
were only a few feet in
diameter.

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EARTH 101: HOW TO APPRECIATE THE PLANET

BY ERIN SHELBY

It's often said that we do not inherit the land from our ancestors, we borrow it from our children. Is your homeschooler prepared to inherit the planet? Perhaps a better question is this: Does your homeschooler know why we should be good stewards of our environment?

The key may be in giving your children a reason to be interested. We're normally better caretakers of things we delight in. When something has no appeal to us, we're more likely to let it get damaged or broken. Finding it of no use to us, we may even discard it.

What reasons can your homeschooler find for taking care of our world? Science doesn't have to be your strongest subject to get in touch with what the natural world has to offer. Here are some ways young minds can become aware (and mature ones can be reminded) of all the natural world has to offer.

Listen to Nature

It can be easy to spend lots of time indoors, but what about finding fun outside? Take a trip outside and listen for the sounds of nature. If you live in a noisy urban area, you might be distracted by traffic, cars, buses, construction, factories, or even large groups of people. You might have to focus harder than someone who lives in a quiet rural area where houses are spaced apart with miles separating them. In your place, right now, what can you hear? A bubbling brook? Birds chirping? Leaves crunching? Ice crunching against your boots? Your shoes touching a puddle or a spot of clumped soil? Acorns stuck under your shoes? Recording the sounds of nature can be a fun activity, and it can also serve as a creative launchpad for musically inclined students to create their own composition.

Mother Nature can also offer us the gift of calming silence. Being alone with your thoughts and taking in the environment can be a calming experience.

Create Art Outdoors

An artist can tap into the imagination to create something powerful, but nature provides opportunities for ready-made inspiration. There's art already in front of us, if we just know where to look. Look for art in nature, and see what you can find. Can you spot the colors in the birds? The changing shapes in the clouds? What about when the seasons change? Can you appreciate that tiny, fragile new life that springs forth from the ground, when plants have just sprung and are at their most vulnerable? Take a pack of pastels or colored pencils and a blank sketch pad outside, and re-create some of the natural art all around you. Or, use what you see as an inspiration to create something totally new.

Earth Nourishes Us

Where do you get your food? A superstore? A farmers market? A food delivery service? We often take for granted how easy it is for us to have three meals a day, but our ancestors didn't have it so easy. For them, hunting, gathering, and foraging were a way of life. Relying on Earth's resources for food and shelter, activities like building a fire for warmth, fishing for breakfast, or deer hunting for dinner weren't hobbies: they were skills essential for survival. Your homeschooler can learn about traditional survival skills (or even try to learn one or two) to get a deeper appreciation for how much humanity relies on natural resources.

For a more book-oriented activity, kids can research how our food supply is being influenced by human activity. Your homeschooler can research artificial sweeteners, genetically modified organisms (GMO's), and the debate over how these ingredients may or may not impact our bodies. Your homeschooler can learn how to have a discerning eye when reading food labels, learn to grow some food or herbs, and be a conscious consumer.

Be Refreshed: Learn About the Water Cycle

It's raining, it's pouring, and this is all part of the water cycle! Water is the most essential ingredient to sustain human life. Unfortunately, many people still struggle daily with obtaining water that is safe enough to drink. Does your family know what's in your drinking water? Your homeschooler can do some research on local water quality, or even send the water from your own home to be tested. How's the water quality? Would you benefit from using a water filter or purifier? Reading data from city, state or federal au-

thorities could be eye-opening. How often are the water treatment facilities being maintained where you live? How often are the sites inspected? The Environmental Protection Agency (EPA) can offer information for your study.

Earth Reveals Its Rhythms

We can learn a great deal from the stability of the seasons and rhythms we find in nature. Natural disasters may cause torment and chaos, but some things always stay the same, anchored to Earth's natural rhythms. Sunrise always arrives in the morning, and sunset always arrives in the evening. Winter, spring, summer, and fall come and go like clockwork. Purchasing an *Old Farmer's Almanac* for the current year, and comparing its data with an almanac from a year or two ago, or even a decade past, could make for an interesting study. What patterns do you see? What has changed? What has stayed the same? You can compare this day in history to today, and see how much the weather has stayed the same or changed. Even if you see great change, you can see how nature still relies on its reliable rhythms of seasons, sunlight, and moonlight to sustain our circle of life.

Sharing and Caring for Earth

We share our planet with everyone around us. Just as those who have gone before us, we enjoy the sounds and sights of nature. We give thanks for the food it gives us and for the life it sustains. From your nature walks, you may have seen evidence of people not showing appreciation for the environment; garbage may litter the environment. Earth invites us to celebrate each morning with a sunrise and each evening with the sunset. Let's help our children understand the need to care for our planet so the next generation may take joy in what nature has to offer.

It can be easy to forget the beauty that surrounds us in the natural world. The sky, trees, sun, and moon are all natural gifts for us to revel in. The sights and sounds of nature are always available. Today, we can enjoy these gifts and share them with our children so they will be prepared to be good stewards of our planet.

Erin Shelby is a former public school music teacher. As a freelance writer, her work has been published on the Daily Bread Blog, a ministry of the Community of Christ.

JUST ADD WATER: FOOD EXPLORATIONS WITH CHILDREN

BY FIONA JONES

Food, in the minds of many, is something that comes in plastic and cardboard packaging. It comes from the supermarket. Maybe it springs spontaneously into existence on the supermarket shelf, or maybe it emerges instantaneously from something like the replicator on the Starship Enterprise. Either way, it has no connection to biology, logistics, or ecology.

It's fun questioning groups of children on their assumptions about food. Even while they are answering, I can read on their faces the beginnings of a surprised realization that their assumptions don't make sense—that they haven't yet joined their scattered dots of information into a coherent picture. Even in the matter of their daily sustenance, they just don't know yet.

When I'm teaching children about ecologically responsible living, I tend to focus on food. Food is one of the constant, everyday drains on our planet's resources—on animals, plants, and land. Food investigations lend themselves to sensory learning, involving not only smells and tastes but also tactile experience, textures, colors, and even sounds. Food provides strong connections between ecology and health: what is good for the planet is also good for you. And food is one of the few areas in which children have a clear input into family decisions.

There are simple chain-of-production lessons that can be done with children of almost any age. Let them handle stalks of wheat, for instance, and see if they can extract the grain. Get a small, manual coffee-grinder, perhaps, and let them use their muscles to turn grain into flour, and then bake a tasty loaf of bread.

For food of animal origin—well, unless you have easy access to a dairy farm, you may only be able to watch milking online. I also tend to use secondary sources for the intermediate stage of production, separating cream from milk. One great sensory lesson on milk products involves shaking a jar of double cream until it creates butter . . . to spread on that bread you just made.

After this, I like to do a sorting activity, such as pasting little pictures of different foods into boxes for Animal, Plant, and Mineral Origin. We don't usually end up with much in the Mineral box. Water, ice cubes, salt. Most of our food comes from plants. *What did you eat for breakfast?* I will ask. *And lunch? What did it come from?*

Most of the time, most of us are seed eaters. You can feed a lot of people on wheat or corn grown in one field, but not as many by raising beef on the same acreage. Sometimes I bring in eight tubs of edible seeds—lentils, wheat, quinoa, chickpeas, kidney beans, rice, maize, and sunflower seeds. (No nuts, in case of unauthorized tastings and undiscovered allergies.) The children run curious fingers through the seeds, and I bring out the eight labels and ask them, a small group at a time, to see what they can identify. For further sessions, I bring in homegrown herbs for the groups to try and identify by smell.

At some point I will ask children, depending on their ages, to guess/question/research which foods grow locally and which are imported, and to consider the problems of packaging, preservation, transportation, and wastage.

One year I brought in some rhubarb from my own garden. The children observed signs of minor slug damage and could see baby slugs present on the leaves; they could also see how easily I might cut off the damaged parts and cook the rest. From there, I explained how a farmer, supplying a supermarket, could not have any slugs on his produce, because in the week or so of packaging, transport, storage, and display, any infested rhubarb would be ruined—and this is why most farms have to spray their crops with pesticides. We talk about how pesticides can kill beneficial insects, harm the soil and water, and endanger bees. The look of shocked realization on some of the nine-year-olds' faces showed me they got the point—that growing your own food is healthier for you and better for the planet.

Seeds Without Soil

If you want to grow plants to maturity, you'll need more than just water. Soil and all that. But there are a number of Just-Add-Water projects that you can try with seeds:

- Cress: You only want the seedlings for your egg-mayo sandwich, so all you need is a tray lined with a wet kitchen towel. Scatter the tray thickly with cress seeds, cover for 6 days, and then allow them to green in sunlight for a day. Harvest and enjoy!
- Sprouted Seeds: Peas, some varieties of bean, and several types of grain are considered to be at their most nutritious shortly after germination. Try sprouting mung bean, alfalfa, adzuki, red clover, lentil, beet, broccoli, radish, sunflower, and mustard seeds.

Safety Note: Because sprouting seeds are kept in warmth and moisture for up to a week and then usually eaten raw, whatever bacteria is around them will also grow. Good hygiene practice is vital to avoid food poisoning.

And finally, I question children about their own involvement in growing food. Children who are involved in growing some of their own food always take great pride in their produce, their creational success, and their connection to nature. It probably does just as much for their emotional wellbeing as for their physical health. And you don't have to grow much to make the connection between yourself and Planet Earth. It doesn't have to be difficult or intimidating. You don't even have to have a garden or to buy compost, seeds or containers.

Here's my contender for the World's Easiest Activity on growing food. It's called **Just Add Water**.

You will need:

- A windowsill
- A shallow tray, such as an old plastic container
- A few carrot tops (just cut off the top quarter inch or so next time you're cooking carrots)

Here's what to do:

1. Stand the carrot tops in the tray on the windowsill.
2. Pour in enough water to keep them wet but not to cover them.
3. Replenish the water as necessary.

Watch what happens! You'll see tiny green shoots emerge from around where the original stem grew, at the top of the orange root. Then thin white roots eventually spread from the sides of each carrot piece. *(Continued on pg. 8)*

After a number of weeks, depending on factors such as warmth and sunlight, you should end up with some tall, feathery leafage which is edible. You can cut it off and eat it raw; even fussy eaters will usually want to taste their own produce. You can chop the carrot leaves and add them to salads or soups. You can ask your children to repeat the process, without your help this time, and watch their pride in contributing to the family's vitamin intake.

This experiment will work well with other vegetables too—turnip tops, beetroot tops, celery bottoms, radish tops—but CHECK FIRST which leaves may or may not be edible. A few are actually poisonous: potatoes, for instance, belong to the Nightshade family, and any green part of the plant is toxic to humans. Maybe at this point there's an opportunity to teach the idea of Edible, Inedible, or Poisonous? A simple way to reinforce the concept is to stick little pictures of different leaves, berries, mushrooms etc. under three labels on a chart.

If you've got a vegetable end you'd like to try growing, safety check first by Googling "Are [veg name] greens edible?" and click through at least one reputable site. "Are celery greens edible?", for instance, got me a long list of culinary and health sources urging me to stop throwing out my celery leaves!

You'll discover your own spinoff activities depending on your children's ages, interests and aptitudes: You could record your plants' progress by staged observational drawings, or maybe with photographs that you would later time-lapse for fun. You might find your experiences inspire story writing. Or your successes may even encourage you towards more ambitious gardening projects indoors and out.

While you are busy growing small items of food for the table, making small improvements to healthy habits, you are also growing the next generation of stewards to Planet Earth.

Fiona Jones is a teacher and parent who tries out lessons on her own children and supplements their school learning with sensory/ exploratory activities. Fiona Jones lives in Scotland, and her work has appeared in Outdoor Learning for the General Teaching Council of Scotland, Folded Word, Mothers Always Write, and more.

Curriculum Spotlight

Environmental Science

Earth stewardship is a primary focus of Oak Meadow's high school Environmental Science course. Here are two activities from the course that can help us consider the value of our local ecosystems.

Activity: Ecosystem Services Value Survey

Consider some ecosystem services in your area that are difficult to assign a monetary value. Perhaps you live near the ocean or the mountains, where the open space and aesthetic beauty are important to you. Perhaps there is a reservoir, used for recreation as well as a water supply. Maybe there is a park or a river nearby where people go for quiet contemplation. Maybe you have a small garden or even a window box with flowers in it that brings joy to you and your neighbors.

You will survey at least five people to determine which ecosystem services are important to them. Come up with two questions to determine how much this ecosystem service is valued. In a third question, ask them "How much is it worth to you to keep intact the place that provides this ecosystem service? What would you pay?"

Activity: Cost/Benefit Analysis

Imagine that you live in a town with a coal-fired power plant nearby. Many people are employed at the power plant and at a nearby coal mine. A neighboring county is building a wind farm to generate electricity. The wind farm will be operational in a few years. The town council has raised the question of whether the existing coal power plant should be closed, as the wind farm will produce as much or more electricity. Part of the cost/benefit analysis will be considering market values as well as non-market values in order to make a wise decision. Use the following list of values to help you explore the issue. Be sure both the wind farm and the coal power plant/mine are included in your discussion.

- economic: the gain or loss of money or jobs
- aesthetic: the appreciation of beauty
- environmental: the protection of natural resources
- cultural: relating to social behavior of the community
- health: the maintenance of human health
- ethical/moral: what is right or wrong?

BE KIND TO OUR EARTH BY REDUCING WASTE

BY JILLIAN BAUER

"Everyone thinks of changing the world, but no one thinks of changing himself."

Leo Tolstoy

Last year, I took Oak Meadow Environmental Science, and I learned about the climate strikes and climate action around the world. This has played a huge part in motivating me to make a difference in the way I live. I can't sit back and watch while our future and the future of our world is in danger. It is important to me that I do something to start making an impact and to inspire others to make a difference, providing them with tools and information they need.

A year ago, I came across some videos on YouTube, and I learned about "zero waste." What is a zero-waste lifestyle? This means you reduce the waste you produce through your lifestyle as much as possible. Zero waste doesn't generally count biodegradable waste, which can be composted, but usually focuses on plastic waste; if you take it up a notch, you can reduce paper waste too.

I prefer the term *low waste* because zero waste seems pretty intimidating. I think people tend to shy away from the term, thinking, "I could never be *zero* waste." But **the goal isn't to produce *zero* waste necessarily; it's to reduce your waste as much as you are able.**

You may be wanting to make an impact, but are wondering, ***where do I even begin?*** You need to tailor the low waste lifestyle to suit you, and figure out how *you* are able to do something to help the planet.

1. First of all, **awareness is key**. Be conscious of what you buy and use as that can help you determine what you actually need or can give up, and what you might be able to swap for something with less environmental impact.

2. Next, **use up items you have before you replace them with a low waste option**. You can start looking for low waste alternatives while you still have old products.

3. Figure out **where you can start**. Where you live, your lifestyle, and what resources are available to you will be a big part of determining what your low waste lifestyle might look like. Here's a list of some areas of consumption where you may be able to start reducing your waste (we'll look at each one in detail below):
   - Food packaging and food waste
   - Clothing (especially "fast fashion" that wears out and ends up in the garbage)
   - Hygienic and cosmetic packaging (toiletries, makeup, soaps)
   - Cleaning supplies

Here's the thing: I don't do all the things I'll suggest here, and I don't expect anyone to. You can pick and choose a few things that work for you. Maybe you can add a few more in the future (or maybe not).

One thing to note, is that with all the food or other products you buy, it's especially great if you buy things with little packaging *and* that are local. It's great to support local brands, and buying things made/produced nearby means less waste and energy in transporting them. Another thing to keep in mind is that some things, for example, skin care products, may be more expensive if they're higher quality or packaged in glass, but they may last longer or be healthier for you. Sometimes you can think of it as an investment to your health and the planet's health.

How to reduce food-related waste:

- **Plan meals in advance.** Plan for a whole week or a few days at a time, keeping in mind what leftovers and ingredients you'll have so nothing goes bad and gets wasted. Kids can get involved by suggesting meals, finding new recipes to try out, and helping with the cooking or shopping.
- **Compost food waste** either at home or through a city yard debris program. Food that ends up in the dump without proper aeration creates methane gas, a huge contributor to global warming. Kids can get involved with composting, and if you can garden, that's a great way to take advantage of your compost and grow your own food.
- **Buy loose produce** without clamshells, nets, plastic wrap, or bags. You may be able to buy fresh bread (in paper or your own bag) or meat from the meat counter (in paper or your own container) to avoid plastic packaging. Food is often packaged in plastic, so a lot of figuring out how to reduce food packaging waste requires some exploration.
- **Buy from the bulk bins whenever possible.** Certain things may be the same price or cheaper to buy in bulk (and you may be able to bring your own bags/containers). Spices, dried beans, rice, flour, and nuts are just a few things you can buy in bulk.
- **BYOB: Bring your own bags!** Reusable produce bags are great, and you can even make your own out of old shirts/clothing (reducing the clothing in the trash). Some grocery stores will allow you to bring your own containers/jars for meat and bulk items, and you can have them place the weight on the containers so they take it off the price at checkout.
- **Use washable cloth napkins** instead of paper towels or paper napkins. Kids could help if you wanted to make your own. *(Continued on pg 12)*

How to be more environmentally friendly with your clothing choices:

- **Buy durable clothing of good quality.** It may be more expensive, but it's likely to last you a long time. The average U.S. citizen throws away 70 pounds of clothing per year. Lower quality clothing (called "fast fashion") falls apart quickly and is often produced in sweatshops where underpaid workers are subjected to toxic chemicals (that can end up in rivers, immediately dangerous for wildlife and people living near them). Many fabrics used in fast fashion are synthetic, produced using fossil fuels, which also contributes to global warming. Basically, you're doing the world a favor if you avoid fast fashion brands.
- **Buy clothing that is certified as fair trade, organic, or ethical trade.** There are good brands that aren't certified, but these symbols are a good indication of a brand with good ethics.
- **Buy clothing second hand.** This is one of the best things you can do to reduce the environmental impact of your clothing.
- **Repurpose worn-out clothing** into things like cleaning rags, doll clothes, painting/work clothes, etc. Have your kids help!

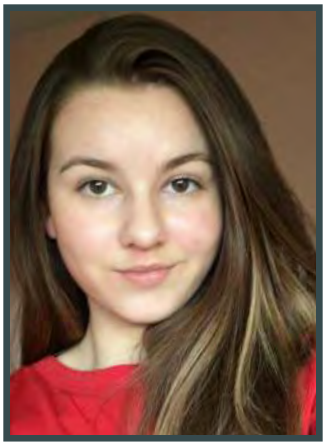
How to reduce waste related to cosmetics, toiletry, and self-care items:

- **Swap out your plastic packaged shampoo and conditioner with bars!** There are lots of shampoo bar options and formulas, often with less ingredients and packaging, at various price points. Bar products also reduce the water required in making the product, so they have less impact in that way as well. Bar shampoos often last longer than liquid ones, too.
- **Try using a bamboo toothbrush**, which is biodegradable (although they may come in plastic packaging). For floss, you can buy biodegradable (silk) floss. Electric toothbrushes may mean less plastic because the heads that you replace are smaller than a whole plastic manual toothbrush.
- **Look for paper-packaged toilet paper.** Even better is trying out a *bidet*, which uses water instead of paper waste.
- **Find skin care and beauty products with fewer, more natural ingredients**, and check a company's website to find out about their sourcing. Here are some low waste options you could try for skin care:
  - Use a bar cleanser for facial cleansing or a product packaged in glass instead of plastic.
  - For toner, there are lots of recipes if you want to make your own.
  - Use coconut oil and washcloths instead of facial wipes or cotton rounds.
  - Use aloe vera (which you can grow at home) or oils such as jojoba and coconut as a facial and body moisturizer, or look for creams in glass packaging.
  - Tea tree oil is a natural, environmentally friendly option to treat acne.
- **Use washable handkerchiefs instead of paper tissues.** This may not work when someone is sick in the house, but for everyday use, handkerchiefs can come in handy.
- **Look for eco-friendly menstrual products**, such as washable pads and menstrual cups. There are even clever advances in undergarments, which are available from many brands at various price points. (These are items you should be trying out while still having whatever you already use as a backup.)
- **Use bar soap** (preferably with paper or no packaging) instead of plastic-wrapped bars or plastic pump soaps.
- **Switching to cloth diapers** instead of disposables can reduce a lot of waste. They aren't going to work for everyone, but they're worth considering.

How to reduce waste related to cleaning supplies:

- **Buy cleaning products in bulk**, if possible, **or make them yourself** (baking soda is helpful for scrubbing dishes, and essential oils like lemon and eucalyptus can be used as disinfectants).
- **Wool dryer balls** are a great alternative to disposable dryer sheets—and you can dot them with essential oils to add a nice scent to your clean laundry.
- **Use rags instead of paper towels** (old T-shirts are great for this!).
- **Get a bagless vacuum.** If you're looking for a new vacuum, consider one that has a canister you can empty instead of one that you need to buy bags for. Most of the waste you vacuum up (dust, hair, crumbs) is compostable.
- **Use compostable sponges or replace sponges with washable dish cloths.**

I suggest starting with one or two of the suggestions for waste reduction. Once you get used to that, add more if you can. Figure out what works for you. All I ask, as a kid hoping for a long life ahead with a healthy planet, is that you do something.

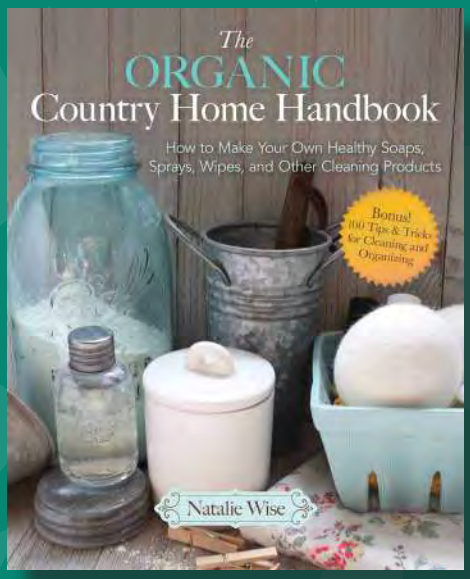


Jillian Bauer, age 16, is an Oak Meadow sophomore. She is concerned about the future of humans and the earth, passionate about making a difference, and hoping to provide people with tools to live more environmentally friendly. She loves spending time with family and enjoys art, cooking, reading and writing when she isn't planning her next environment-related project.

Life hacks!

If you are interested in learning more about reducing waste by making your own cleaning products, check out these two books by Oak Meadow's digital media maven, Natalie Wise:

The Organic Country Home Handbook: How to Make Your Own Healthy Soaps, Sprays, Wipes, and Other Cleaning Products



The Modern Organic Home: 100+ DIY Cleaning Products, Organization Tips, and Household Hacks

GIVING NATURE A VOICE: USING SKIT WRITING TO NURTURE EARTH STEWARDSHIP

BY JOHN DORROH

Each day we find stories in the news about how the rate of pollution of our planet is accelerating at an alarming and unacceptable rate. No longer does poisonous contamination occur somewhere else around the world—it's happening everywhere, including right *here* in our parks, cities, neighborhood lakes and rivers, and backyards.

It's vital to help students become aware of the issues and find ways to begin resolving them. This is the basis of becoming good stewards for our planet.

Sweetie the Sweet Potato Speaks

One year, part of my charge was to teach a science class of seventh-graders who had all failed the course at least once. It was going to be a challenge. I tried all of the usual tricks of the trade, and nothing seemed to work. There had to be something that would help my students become less resistant to learning some basic science.

It was only the third week in September, and I found myself wishing for a vacation. Out of sheer exasperation, I rounded up three plants in the classroom: a cactus, a potted ivy plant, and a sweet potato vine. I placed them on my demonstration counter and asked the students what they knew.

"That cactus has needles on it," said one student. "It'll stick you bad!"

"You can eat that sweet potato," said another.

As they continued to talk, I recorded their comments on the board, making three separate lists under the names of each plant. It didn't take long to run out of things that they knew. We used the internet to do a bit of research in order to grow our lists, ending up with about five or six facts for each plant.

"Let's pretend that these plants can talk," I said. "But first, let's give them names."

Carl the cactus, Ivey the Ivy, and Sweetie the sweet potato became the characters in our classroom skit.

I asked a colleague for some play books left over from last year's school play. We looked through them together so that each student could see the parts of a play and how they were formatted.

"A skit is really just a short play," I said. "The way they're written is the same."

I instructed them to write skits, using the facts that they had collected. I asked them to underline each fact and number it so I could keep track more easily.

For the first attempt at this activity, I required a minimum of five facts per skit. After we tweaked our rough copies, it was evident that it would be easy for them to add more facts on subsequent skits.

The students acted out their skits while I videotaped them and used a simple rubric to assess what they had done. I knew I was onto something when one of the students asked me if they could memorize their lines and bring props.

Below is part of one of the skits (with facts underlined and numbered):

> Carl: I'm the coolest plant ever because I can use my needle-like spines to protect myself from potential predators. (1)
>
> Ivey: That's certainly not cool since you live mostly in arid climates. I, on the other hand, need a moderate amount of sun (2) and some of my cousins prefer subtropical or tropical environments with a lot of water. (3)
>
> Sweetie: That's fine, you two, but I'm special because I eventually produce an edible tuber. (4)
>
> Carl: Tuber? What's that?
>
> Sweetie: A tuber is an underground, enlarged structure in some plant species used as storage organs for nutrients. Many, like the white potato, are edible by humans. (5)

As it turned out, skit-writing with this particular class worked well. The students processed science facts and seemed to gain a better understanding than by the usual lecture method. They cooperated, for the most part, talking to each other about the topic, and seemed eager and remained on task.

Expanding Horizons

But would this strategy work with other courses? I decided to try it.

I used skit-writing in an advanced biology class to supplement the scant amount of information in our textbook about enzymes, which was a topic that was included in our state standards. Students conducted research, writing their facts onto color-coded jumbo index cards. For example, facts they found about enzymes in plants were written on green cards; in the human body, blue cards, etc. They wrote the source of each fact on the back of the card for referencing, should they need it later. Students then taped their colored cards to a large sheet of paper. The cards were numbered and spaced about two inches apart from one another, giving the appearance of a quilt.

They worked in small groups of two or three to write their skits. They numbered each fact to match the number on the cards for easy referencing. I was excited to see that skit writing was a good way for students in an advanced class to gain a better understanding of science concepts.

This strategy could work well with almost any topic in any discipline. For instance, let's say that you want your students to learn about the effects of the recent fires in the Amazon rainforest. Skit writing can be an effective way to help them understand how good stewardship is the responsibility of every human on the planet.

You might start with some background information: The trees in the Amazon rainforest in Brazil and other South American countries produce about 20% of the available oxygen on the planet. Their vitality is so basic for all humans and animals that understanding what these trees do is important.

Then introduce a situation: Near Porto Velho, Brazil, a lush tropical forest stands across a marginal border of burned-out, charred remains. The trees, although different species and varieties, work together as a family unit.

Let your students conduct independent research on what is happening in and around Porto Velho or other affected areas of the Amazon rainforest. Working in pairs or groups of three, ask them to write skits using their collection of facts. Set a minimum number of facts for each group. These skits can easily be recorded on cell phones and shared with others. *(Continued on pg 16)*

Based on this scenario, students might create a skit featuring a community of trees on the lush side of the burn area "talking" among themselves about the devastation that has occurred just meters away where some of their community members have perished in the flames. It might go something like this:

> Barbara: (*a barrigona*, or "pot-bellied palm"): I didn't realize that we were in any kind of danger. I feel terrible about the fires. How did it start?
>
> Ralph (a rubber tree): It began when farmers to the west tried to clear a large area for crops. Some strong, unexpected winds came along and the fire got out of control.
>
> Paul (*a palmito* tree): I heard that the fire was intentionally set.
>
> Barbara: We don't really know for sure. Let's gather all the facts before we start speculating among ourselves. That's how rumors and gossip get started.
>
> Paul: It really doesn't matter *how* the fires started. What matters is that dear members of our tree community have perished, and the environment will feel a collective loss.
>
> Ralph: Right. My immediate family had over three billion members not so long ago. Just ten years later we're down to 1.9 billion. This kind of disaster would have been catastrophic back in the late 19th and 20th century during the Amazon rubber boom. But now I'm concerned over the loss of oxygen that all of us trees in the Amazon rain forest produce—a whopping 20% of all available oxygen!
>
> Barbara: I totally understand, Ralph. My immediate family had over six billion members just 10 years ago. Today we have less than four billion. Many of my family members were cut down for wood for floors in city housing. Our fruit is eaten by tapirs, spider monkeys, toucans, and other animals. If we keep being cut down, what will our animal friends eat?

Depending on the level of sophistication of your students and the topic, and how much time you have to devote to this type of strategy, stage directions can be included and props incorporated into the skit.

There's no end to the topics you can use skit writing to explore. Here are a few to try:

- Show how a family in South America turns their burned-out rainforest area into a village garden.
- Explain how a plastic bottle recycling center works.
- Demonstrate how an industrial plant's Board of Trustees makes decisions (good or bad) that affect the health of people, animals, and plants in part of a city or county.
- Relate how dolphins, whales, and other marine organisms react to litter in the oceans.
- Explain what people can do to raise awareness of the issues resulting from the exploitation of Earth's resources.
- Create fictional environmental impact studies on a hypothetical recreational area called Lake Muckygoo that a developer had purchased.

Think back to your days as a student. How excited were you and your classmates when the teacher did something different or out-of-the-box? Students of all ages, for the most part, enjoy any activity that gets them up out of their seat and actively learning.

Skit writing is a novel and effective way to let students interact in an engaging manner to learn and understand content. It requires that students become more involved in the learning process. They have to research facts, communicate with one another, make plans and decisions, discuss issues that face our planet, and propose solutions to the problems.

Who knows what your students might come up with to help alleviate global pollution? It might be something in the Amazon rain forest or down the street at a local factory. Teaching students to give Earth a voice can change the world—literally.

John Dorroh taught secondary sciences for almost 30 years. Now he consults with teachers in several states, sharing with them strategies for helping young learners understand science using reading and writing. "Never stop exploring your world," he tells his teachers and students.

Craft

TERRARIUM

There are times when you can't get outside to explore nature, but you can bring nature inside by building a terrarium. A terrarium is a miniature garden in a glass bowl or jar. It can be as simple or as grand as you like. Some people like to add miniature figures and structures to their terrarium, and others like to stick to natural materials. Once you add water and a lid, your terrarium becomes a tiny closed ecosystem where you will see the water cycle in action.

Materials

- clear glass jar with a lid
- two or more small plants (small enough to fit in the jar)
- moss (optional)
- bottlecap
- soil
- sand
- small rocks

Note: *The amount of soil, sand, and rocks you'll use depends on the size of your jar.*

Procedure

1. Place a layer of small rocks in the bottom of your jar.
2. Cover the rocks with a layer of sand, and then a layer of soil. Each of these three layers—rocks, sand, and soil—should be about the same thickness, and should fill your jar about halfway.
3. Carefully transplant the small plants into the jar, digging a small hole in the soil and making sure the roots are covered completely. You may have to add a little more soil, depending on the size of your plants. If your plants reach above the lip of the jar, trim them so they can fit completely inside.
4. If you have moss, gently press it into the soil around the plants.
5. Fill a bottle cap with water, and place it on the soil.
6. Place the lid on the jar. Your terrarium is complete!

   Put the terrarium in a sunny place, and observe what happens. Try to notice the different phases of the water cycle. Notice how long it takes the water in the bottle cap to evaporate. Look for condensation or "fog" on the sides of the jar. Enjoy your little piece of nature!

STEWARDSHIP BEGINS OUTSIDE

BY CAITLYN OBOLSKY

A leadership teacher once told our high school class that to be an effective leader requires ownership. You need to be fully vested in an outcome in order to convince others to follow, wherever you may go. Stewardship is no different. People—including children—advocate for those things which they care about most deeply. Theories of education reflect the connection between experiences and learning.

> *"The child often sees only what he already knows. He projects the whole of his verbal thought into things. He sees mountains as built by men, rivers as dug out with spades, the sun and moon as following us on our walks."*
>
> *-Jean Piaget*

Theorist Jean Piaget believed that the capacity for abstract thinking does not develop until children are between 11 and 16 years old. Similarly, Waldorf pedagogy suggests that the capacity for strictly academic learning happens between ages 14 and 21, a time referred to as the thinking or "head" phase of development. Abstract thinking involves those things that are held in our mind, such as the concept of environmentalism.

Concrete thinking, on the other hand, arrives much earlier and involves the tangible, such as picking up trash at the beach, pulling weeds at a nearby creek, or using cotton tote bags instead of plastic.

Tears are shed over wrinkled leaves that have been lovingly selected by hand. Sweetgum balls are a delight to collect by the handful and an accessible natural wonder. Lesser goldfinches, scrub jays, crows, morning doves, and hummingbirds offer a glimpse into another world as they pass through the backyard or a neighborhood park.

While we enjoy the incidental flirt with nature as we walk along the sidewalk en route to some other destination, to truly appreciate and know this natural world requires *intentionality*. Children cannot conjure a picture of "nature" when the only exposure they have is limited to pictures or words in books. They need a concrete experience in order for the concept to penetrate their little souls.

They need to smell the dirt, to handle the lichen, to see the worm after the rain.

> *"What the human being sees, what is poured into his environment, becomes a force in him. In accordance with it, he forms himself."*
>
> *- Rudolf Steiner*

Natural phenomena are happening all around us; we just have to stop and pay attention.

Several years ago, our local homeschooling group organized a ladybug hibernation hike. Despite the arduous 3.5 mile out and back hike, the journey through the majestic redwoods was more than worth it. We had never seen so many ladybugs in our collective lives. They were *everywhere*. Covering the floor, the fencing, the trees, bushes, and they eventually began to crawl or land on the children. Until that day, I did not even consider what ladybugs might do with themselves when the weather turns cold.

The consistency of nature provides unlimited opportunities to observe its majesty. Monarch butterflies overwinter in Santa Cruz and San Diego. Florida provides a turtle egg-laying season. Salmon spawn in rivers. Deer shed their antlers. Geese migrate. No matter where you live, be it urban or rural, the opportunities to observe awe-inspiring seasonal occurrences abound. A visit doesn't have to be to the woods in order to be special. It could be a visit to the tide pools, a local cave, or a trip to see desert blooms.

If you're not the hiking type, or if you live in an area that does not afford extensive opportunities to engage with nature, do not despair! You don't have to make a trek with all of your gear, and all of the children and all of their gear, in order to develop a thoughtful relationship with our natural world. Thanks to the internet, we have raised ladybugs, butterflies, and even praying mantises in our very own living room. (The trick is to release the latter before they begin cannibalizing each other—yikes!) If insects aren't appealing, you could plant a native garden or create a terrarium. Even one potted plant that could support honeybees or local butterflies could be a delight and present extensive opportunities for learning and growth.

To combine a pun with a cliché: Nature is out there! These kinds of experiences that make the children audibly gasp in excitement deeply imprint themselves. They tell the neurons in the developing brain, "Hey! This is amazing! I can't believe this is happening! I don't want to forget this!" Having meaningful and recurring engagements in nature will progressively develop into a deep-seated desire to keep the environment safe and protected. That's the stuff of ownership.

Caitlyn Obolsky has been an eclectic homeschooling mom since 2011. Her five children range in ages from 3 to 12. A licensed California attorney, she is the Legal Chair for the California Homeschool Network, and she often does work for her husband's law firm Lemon Law Partners, LLP. She is an Enneagram type 7.

OUT OF PAPER

BY E.R. ZAREVICH

As a teacher, I have an unhappy, codependant relationship with my printer. There is no affection in it anymore, no sense of gratitude towards that moody old machine that saw me through university and my post-grad teaching course. It evokes only two emotions in me now: guilt and stress.

Guilt, because in my head I'm counting how many trees I'm killing off every time I print something new for my students.

Stress, because of the blinking lights that taunt me every time something goes wrong. *Ink cartridge is low*. *Paper jam*. And, the very worst one of all, *out of paper*.

Paper costs so much money. It's ironic. I'm laughing at myself as I pull into the Staples parking lot. I've got enough cash in my wallet, but "I'm trading paper for more paper," I'm thinking as the store's sliding doors open for me. I'm wondering how many teachers and homeschooling parents feel the same way. How much of this paper will get crumpled into a ball and forgotten about in seconds?

Like anyone dissatisfied with a relationship, I'm wondering if it's time to end my troubled life with my printer or at the very least create some tolerable, healthy distance between us. Together, we're helping to kill the environment. My jaw clenches in annoyance every time I see a student nonchalantly shove the worksheets and handouts into their bags, with no thought whatsoever as to how much it cost me or planet Earth. When carelessness goes a step further and they lose their worksheets, I lose my patience.

I finally understand why it upset my mom so much when I was the same age and just as wasteful with paper, and why my teachers also tended to be on the stingy side with the classroom's precious and very limited stacks of lined and construction paper. I get it now. Paper doesn't grow *on* trees, it comes *from* trees. A small preposition change makes all the difference. Switch to a "be" verb, and you've got, "Paper *is* trees."

I studied both literature and history in university, and a small tidbit of literature's history that I think about often is how the famous Brontë siblings, as children, coped as budding writers and storytellers in a frugal, lower middle-class household that had no tolerance for wastefulness, nor any disposable income to buy writing paper. Paper, back in the Victorian period, was a *huge* luxury, a staple of only the rich, and they weren't rich. They couldn't drop into Staples or Dollarama or Walmart to pick up loads of it when they were running low. They *made do*, with scraps.

These four bright young students—Charlotte, Emily, Anne, and their artist brother Bramwell—created these impressive, adorably tiny storybooks out of, get this, *shreds of wallpaper and sugar packets*, and whatever their curator father passed on to them from his study, which wasn't much, considering the man had sermons to write, and long ones at that. If that's not enough to convince you the Brontë Bunch were committed, I must also add that these youngsters painstakingly *handstitched* these books together to make them resemble the literary magazines they devoured.

Historical autobiographer Deborah Lutz describes their dedication as such:

> "The Brontës felt such an intimacy with these closely handled books, made by their own limbs and clothed with materials familiar from the kitchen or the parlor. This closeness of the body and the book was an ordinary feature of daily life in the nineteenth century, a relationship no longer obvious today." (*The Brontë Cabinet: Three Lives in Nine Objects* 23)

I couldn't agree with Lutz more. That appreciation the Brontë children had for their scarce resources has been lost in the fast-paced modern world's disdain for stringent, old-fashioned recycling.

It would be an interesting, experimental challenge to try for any homeschooling parent who's trying to tighten the reins on their household paper consumption, for financial or environmental reasons, or both. Let's call it **The Brontë Challenge**. For a week (or, if you're feeling ambitious, a month), have your children complete their schoolwork or pen their stories on everything *but* conventional paper. Anything from whiteboards to chalk slates to cut-up cereal boxes will work. Use any chunk of cardboard laying around the house. Use the margins and blank spaces of newspapers or magazines. Use the back of envelopes or the back of birthday or holiday wrapping paper. You can even use up the leftover napkins you filched from your last trip to a fast food restaurant. See if your kids can work with these restricted resources. See if, like the Brontës, this bit of frugality brings a closer relationship to their works, and to the resources around them.

Sometimes scarcity is a good thing. Maybe by being out of paper, we can gain a greater appreciation of what we have.

E.R. Zarevich is an English teacher from Burlington, Ontario, Canada. She has been published in Understorey Magazine, ReedsyPrompts, and Living Education.

Earth Cycles

We asked the Oak Meadow faculty and staff, "What's your favorite way to share nature with kids?" Enjoy this selection of their great ideas!

"I used to let my kids take turns in deciding where to go as long as it was outdoors. They would be in charge of a map to get us there. They could use a real map or draw their own. Once there, they would be in charge of leading whatever activity was decided upon. They loved being entrusted to lead excursions. They had so many great ideas and never got tired of learning and sharing what they discovered."

"Taking miniature dolls outside was a way I experienced the world. Especially in mossy places, the change in sense of scale is amazing: we see the world so differently when interacting with it through a 3" doll!"

"The most important part of sharing nature is to make sure there is no agenda! If you go outside with open eyes, ears and all of your senses engaged, spontaneity offers opportunities that might otherwise be overlooked. There are times when you may be focused on a specific topic, but don't miss the natural joy of an enthusiastic child because they just found their seventh snail in five feet!"

"I've noticed that imaginary play is so much richer and all-encompassing when it happens outdoors. I love it when kids set up outdoor kitchens or cafes with a rock stove or tree stump table, serving mud pies and snow ice cream. Adults can facilitate this by bringing a few simple material items outside, such as a wooden spoon, an old pot or ice cream scoop. Kids love to pick things, so finding a location where they can pick leaves, dandelions, etc. is key. They can quickly learn what is rare and shouldn't be picked and what is free for the taking. I'm also a firm believer in allowing kids (those who want to) to catch and release. They can be taught from an early age how to safely hold frogs and other creatures. It's a critical step in bonding with nature and in learning empathy and compassion as well."

"I lead a summer camp for 4th through 6th graders where we make clothespin dolls and set up a miniature world out in the woods. It's such a wonderful experience, and it allows kids who sometimes think they've outgrown 'little play' to delve back in whole-heartedly! We create a village/community with bartering, currency, jobs, etc. It's such a fun way to explore civics and survival skills with kids."

As one teacher said, "The natural world is a perfect classroom and nature is our greatest teacher!" Here are more ideas for outside fun:

Gardening

Going for a full moon hike especially in the winter when there is snow on the ground.

Kayaking, especially around marshlands.

Helping the Nature Conservancy with their annual bird banding study.

Bringing specimen jars, bug viewers, jeweler loupes, and binoculars, and finding a shady spot under a tree to observe the natural environment.

Exploring waterfalls and hidden nature spots.

"My 4-year-old and I would sometimes go 'day camping.' I'd pack up our hammock and a cook stove and we'd hike out into the woods somewhere. We'd setup the hammock camp and then cook lunch. Then we'd read stories in the hammock and take a nap. If my daughter fell asleep, a little piece of chocolate would magically appear under the hammock. Then we'd pack up and head home."

"I love anything that brings children in contact with the materiality of nature: rowing a boat or balancing in one and feeling the buoyancy of water (I love turning children loose to climb around in a rowboat in shallow water to rock and learn how it feels), all of the great resistance of mud, the braidability of grass, building with stones, rolling in snow, etc. In a world that is all about inside voices and sitting still, seeing that nature can hold and welcome those parts of children that are kept under control the rest of the time is an important part of feeling good and valid in it."

When it's not easy to get outside, here's how to bring the natural world indoors:

"We have a nature table that we quite enjoy adding to from walks we've taken."

"I have a corn house plant that is about 3 feet tall, and we discovered that if we water it by putting the water into the top leaves, the water spirals down the stalk into the soil."

"One of my students was living in Buenos Aires in an apartment with only a small balcony. For her science experiment of observing growing seedlings, she started her seeds indoors and then put the pot onto her balcony. Surprisingly, the pot of seedlings was taken over by a mourning dove. My student watched the female lay two eggs and observed them as they hatched and grew into baby birds."

"My favorite thing to do with kids is cook outside. I'm attaching a photo of our most recent 'stone soup' which is always made from whatever the kids bring from home. We also make tea from birch and spruce, and we also have a great recipe for bannock bread, in which we use dried spruce that's been food processed with regular sugar, so the flavor is awesome. It cooks on rocks right next to the fire. Lots of great conversations about mushrooms, fiddleheads, and other possibilities to eat are always happening while we are out in this frame of mind!"

Spruce Sugar

- ½ cup powdered spruce needles
- ½ cup sugar

To make the powder, cut or pull spruce needles from their branch, and place in a glass baking dish. Bake in the oven at 200 degrees until individual needles snap easily when bent. Blend dried needles in a food processor or coffee grinder until powdered. If using a food processor, adding the sugar while blending may improve results. Once the spruce needles are powdered, add the sugar, and stir or blend until well incorporated.

(Thanks go to Ken Benton of the North Branch Nature Center, Montpelier, Vermont for the recipes!)

Spruce Sugar Bannock Bread

- 1 cup spruce sugar
- 3 cups flour
- 1 teaspoon salt
- 2 tablespoons baking powder
- ¼ cup butter
- 1 ½ cups water

Mix dry ingredients well in a large mixing bowl, then cut in butter until well incorporated. Stir in 1 1/2 cups of cold water until dough becomes workable. Gather dough into a large ball, and knead for a couple minutes. Form flat patties of dough about 1 inch thick and place on hot cooking stone (or greased skillet if indoors). Cook until dough reaches a dark, golden brown on one side then flip and repeat.

When we cook outside, I put all the ingredients in a Zip-lock bag ahead of time. Kids can knead the bag instead of mixing!

How to Preserve Children

Recipe from a South Dakota old recipe book (oldrecipebook.com)

To preserve children, take:

- 1 large grassy field
- ½ dozen children
- 2 or 3 small dogs
- a pinch of brook
- some pebbles

Mix the children and the dogs well together. Put them in the field, stirring constantly. Pour the brook over the pebbles. Sprinkle the field with some flowers. Spread over all a deep blue sky. Bake in a hot sun. When thoroughly browned, remove and set to cool in a bathtub!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