Earth Day: Changing Earth

By TeacherPlus | Apr 22, 2015

It is believed that the Earth is 4.5 billion years old. And this Earth won't be around for much longer if man continues to live as he has been. Through examples of man's foolish actions, the author suggests ways of getting children to care better for our 'home'.

When we think about the Earth, we might visualize it as a blue planet circling about in space, along with other planets, stars, and celestial bodies -- a small piece of the universe that is our home. Look a little closer at it, as if you were coming in to land on it in a spaceship, and you would see continents and seas, mountains and rivers, deserts and forests... This Earth of ours has been around for millions of years, changing inexorably, although it's at a pace that is very slow for us to recognize on an everyday basis. Its tectonic plates move, and masses of land have broken up to form continents. Sometimes it has cooled down so much that it has been completely covered with ice, while at other times, it has warmed up and sea levels have risen.

Those changes, however, are on a timeframe that is to be counted in millions of years. What of the changes which are within the timeframe of the ordinary life span of a human being, say 70 – 80 years? Have human beings caused any considerable geographic modifications to this Earth? Well, we certainly have: whether by chance or by design, we've brought about many geophysical changes.

Small mistakes, huge consequences

The Earth holds lots of treasures that human beings want to use or exploit for gain: oil, metals or minerals, we depend on the Earth to supply our needs. We mine these from the Earth, riddling it with tunnels and huge caverns. In Louisiana in the US, one such mine was established for the extraction of salt in 1919. By 1980, it had expanded into a huge network of tunnels and caverns, with some of them running right under the nearby Lake Peigneur, a wide but shallow lake just over 10 feet deep. This was the time when an oil and gas company began some exploratory drilling on the lake bed. Although taking great care to avoid the mine, a miscalculation occurred, and a hole 14 inches wide was accidentally drilled right into the mine. It's easy to guess what happened next: the lake's waters were sucked into the hole, creating a vortex as the salt underneath dissolved. A huge sinkhole was created, and within a few hours, the drilling rig, several other barges, and many acres of the surrounding land were pulled down by the force of the whirling waters! Earlier, when the lake was full, extra water would flow from it through the Delcambre Canal into the Gulf of Mexico: this accident caused salt water from the Gulf to flow in the opposite direction, into the lake, and this continued for five-six days until the water levels equalized. Today, Peigneur is a rather large brackish lake, shallow for the most part but over 1300 feet deep in one area, and its ecosystem has completely changed.

This event took place in November 1980. Sinkholes are far more common today. In August 2012, a sinkhole was noticed in Bayou Corne. Created by the collapse of a salt mine similar to that under Lake Peigneur, it had grown as large as 24 acres in size, and was at least 750 feet deep by August 2013; an entire town has had to be evacuated because of it. Numerous sinkholes are also appearing in the vicinity of the Dead Sea, as it shrinks a little more each year, some of its water drawn away for other uses, while the inflow from the River Jordan is being diverted for various other uses. As one journalist put it, 'the Dead Sea is dying.'
Insidious adversary

One ubiquitous material that we use almost all the time is plastic. A material that is durable and cheap – or so we might think. The truth is that while plastic fills our lives, it won’t go away as easily. It will break down into smaller and smaller pieces, but even at a molecular level, it still stays a polymer for decades, and breaks up into harmful hydrocarbons when it does finally decompose. While plastic is harmful enough even on land, given the noxious fumes it begins to emit after a certain time, the fact is that it is also slowly filling up our oceans.

Between the continents, there are five huge known garbage patches, each with more plastic than biomass. Scientists point out that it’s not in the form of easily collectible trash, but millions of minute pieces of plastic that’s floating in the world’s oceans; and a lot more plastic’s sunk to the ocean floor.

When all the sand is gone (classes 6-8)

The aim of this activity is to get children to understand that our actions have specific consequences for the Earth, both in the short term as well as the long term. One issue that has surfaced in India today is illegal sand mining. Get the children to collect information to answer the following questions:

- What is sand mining? Where is sand mined from?
- Why is sand mined in the first place?
- Is there unlimited sand in the world? How is sand formed?

Once these questions are answered, you could get them to debate the question, “What will happen when all the sand in the world is used up?”

While the discovery of the ‘Great Pacific Garbage Patch’ in 1997 drew attention to the severe problem of plastic and plastic waste, this is a global problem, not only because a great deal of the trash from all continents is carried into the seas, but also because plastic enables certain kinds of life to thrive, while causing others survival problems.

Scientists have named the forms of life that thrive in water with plastic in it the “plastisphere”, and studies show that this can change the balance of a sea ecosystem, destroying all the native life that has kept the oceans healthy for thousands of years.

Back to the Earth (classes 4-6)

We are taught that what has come from this Earth goes back to this Earth. But how does this work in practice? Start an experiment at the beginning of the school year that could run for a whole term, to see how different materials decompose and “go back to the Earth”. Bring in different kinds of materials—leaves, cotton fabric, paper, pebbles, metal, plastic, anything. Make sure to have three items of each kind. Take three large glass beakers and put one set of things in each. Setting one aside, in the second, add enough water to soak everything well, and in the third, add a mixture of sand and mud, mixing up the items in them well. Mark the first ‘air’, the second ‘water’, and the third ‘Earth’, and place them in a well-lit corner. Each week, designate a day of the week when the children will go to the beakers to see what has changed, and
write down their observations, turning out the contents of the beaker marked ‘Earth’ on an old newspaper or into a wide tray to see what is happening with the items in it. Also make sure to refill the beaker marked ‘water’ each day, so as to ensure the items remain submerged. What has changed and what hasn’t, and why? You could even discuss how some things are easy to burn – what happens to these things in this case?

Change: first within, then without

Obviously, our intention is not to create disasters on the Earth – but clearly we need to understand the Earth better, and act responsibly. Whether it is littering the Earth with debris (or space – we humans are doing that too!), or wasting resources, or global warming leading to changes in weather patterns (including causing cloudbursts like the one that led to the Uttarakhand floods last year), we need to understand that it is not only the big industries but also the small things that we do on an everyday basis that affect the Earth, and we must assess honestly the consequences of our actions for ourselves and our Earth if we are not to wipe most forms of life out of existence. We also need to take steps to repair the damage that we’ve already done.

Jadav Molai Peyang of Assam is living proof that individual effort can make a huge difference. After a flood in the Brahmaputra washed snakes on to a sandbar, Peyang saw them dying because there was no respite from the heat. The 16 year old made up his mind to do something about it, and with guidance from forest officials, began to grow bamboo on the sandy island. This was in 1979, and since then, he continued planting, adding several more species of plants. Over one lakh trees now fill the once barren sandbar, which is now called the Molai forest after him, and it is today home to several species of animals as well.

Peyang is not a rich man, but an ordinary person who makes a living by tending to cattle and selling milk. His story reveals the extraordinary potential within the ordinary, the ability to bring about transformation simply by being selflessly dedicated. As is clear, we really do contribute to changes on the Earth, even if it seems to be just a little thing in itself. And potentially, we can do good rather than harm, if only we choose right.

A little kindness (for all ages)

Try this for one week: with each person you meet, begin every conversation with a smile and a compliment. The compliment has to be an honest and heartfelt one, and it has to be given with a real smile, no matter what your mood. Note the effect of this behaviour both on others and on yourself each day. Has anything changed at the end of the week?

Only kindness, compassion and appreciation for others can provide the motivation and the willingness to act and bring about positive change.

This article, by Sheel, was published in the ‘Facets of Geography’ section of Teacher Plus: May-June 2014 Geography special.

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