WHY ARE WE LEARNING ABOUT EARTH?

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We so often hear anxiety expressed about the planet our children are to inherit given the contemporary desecration of many ecosystems.However many schools are not waiting for the inheritance to come, rather they are imbedding in children a deep awareness of their intrinsic interconnectedness with Earth's fecundity and life giving systems. This is one such example.

BE IT A ~~PREP~~ or grade 6 class, students give this answer without hesitation: *"because it is where we live – it's our home"*. It makes immediate sense to them that it's pretty important to understand how things work in our own home, and the Earth is the only home we have. For students of the Foodweb Education program, coming home to Earth means developing an understanding of how our home works and what our place in it is

Every child is an individual existing within a community and communities exist within ecosystems, which in turn comprise the Earth's systems as a whole. Each of these systems, be it a single cell embedded in our own human body or the entire Earth's biosphere, exist and is sustained by the same laws regarding energy and matter. They all require flows of energy to drive the cycling and interaction of materials within them. This is where our Foodweb Education program begins. No matter what the scale, all inter-connected systems which generate and support life, are governed by the same laws of energy flow and matter cycling, and sustainability education should start with the science of what sustains life. Using the primary ecological patterns of energy flow and matter cycles to investigate living systems provides the foundation of our garden-based ecoliteracy program. To be ecoliterate means to be literate about our eco, etymologically derived from oikos , the ancient Greek word for home. It is to have an understanding of our home the Earth, and the processes that sustain life. Foodweb Education is a program designed to help primary school kids come home to Earth through becoming ecoliterate.

School kitchen gardens provide an ideal setting for students to become ecoliterate. Gardens function by capturing energy from the sun, so they can be a space where students observe and interact with these laws and patterns regarding energy and matter in action. It is for example, a space where they can experience how a tomato plant grows in full sunlight with nutrient rich soil compared to its counterpart in the shade. Through gardening students can connect directly to the processes and materials that make life, including their life, possible. They also gain insights into how to we can ensure we don't damage, ignore or undermine these things. They learn to apply these patterns as thinking tools for understanding the world around them and their own place in it, and over time to analyse more complex systems. Using these laws of nature to frame children's involvement in gardening, cooking and eating integrates their everyday practical experience with a scientific view of the world, and directs education toward creating the imperative shift to an ecoliterate citizenry.

The Foodweb Education program gives children opportunities to explore and connect to Earth and its processes through gardening, cooking and eating and equips them with a mental toolkit. The toolkit sets students up to identify and trace the flow of energy and the cycling of materials through systems, be it a garden or their own body. Exercises in tracing energy and matter flows broadens the horizon of students'

thinking and increases their potential for problem solving in disciplines from the life or Earth sciences, to history or engineering. An inquisitive habit of mind is encouraged through asking and investigating: where does the energy come from? What does it affect? What elements are cycling as a result of this energy flow? Where have they come from, where are they going to? What connections, relationships, or things are the result of these interactions? What happens if something changes?

Whether we are talking about bananas, photons, fossil fuels or simply pushing a wheel-barrow, learning how to trace the energy flow from source to sink is a critical tool for understanding how our society functions. In the garden, students learn how plants capture and store light energy from the sun and convert it to chemical energy in our food. This chemical energy will eventually be converted to heat by our body's metabolic processes and radiate back to space. Children know and understand innately that the energy we require to live and grow comes from food, so connect immediately on a personal and practical level through the processes of growing, harvesting and cooking. We can apply the same thinking to tracing the light, heat and sound energy coming out of our computers back to ancient sunlight. With these thinking tools, students can learn to appreciate that fossil fuel is a finite resource and understand what it really means to 'save energy'.

By eating from the garden, children can discover that the elements contained in our food cycle do not leave Earth's atmosphere. They discover that the banana, or the chemical elements that make up the banana (eg. C,H, O) do not go away. It's an ideal setting for exploring matter cycles and the resulting relationships and connections that exist in the garden ecosystem. Observing basic biochemistry in the garden sets students up to use cycles to understand large-scale human actions around resource use.

Growing, cooking, eating food and composting gives children their own personal laboratory to explore the patterns of energy flow and matter cycles within their own system. Children have an opportunity for unmediated experience and exploration of these patterns while teachers have a way of integrating the casual, non-threatening inclusion of science into fun, everyday activities with edible rewards. With some guided gardening and cooking the students get to witness and apply these laws of science and ecological patterns as thinking tools for understanding the world around them, over time applying them to more complex systems with the aim that they become broadly useful and intuitive.

The Foodweb Education program gives children opportunities to explore and connect to the Earth's processes and other inhabitants through exploration and fun in nature. Our priority is that children feel inspiration and enjoyment during their time in the garden. Within this time we create opportunities and experiential education activities that encourage biophilia, inquiry, action and reflection. We provide avenues and time for connection with nature, and model an approach to it that promotes fascination, curiosity, compassion, exploration, a sense of wonder and awe, and empathy for other creatures. Developing biophilia, a love of nature, is a key part of becoming ecoliterate and creates the drive for further inquiry. Biophilia sets students up for inquiry, action and responsibility by promoting an interested and empathetic attitude, the desire to understand and contribute to the world, driven by their own connection and respect for nature and confidence in investigating how it works.

As the next generation enters a world of changing climate and resource use, Foodweb Education uses gardening and cooking to provide children with an inspirational and experiential learning space to develop habits of mind and practical skills for understanding and adapting to the challenges of our time. The familiar acts of growing, eating and composting have the ability to teach children key physical laws of the universe in a way that they can relate to and potentially use to make daily decisions, critically analyse society and even explore metaphysical cosmology. The program connects them to the fundamental processes and materials that make life possible. We use these patterns of energy flow and matter cycles through systems because they apply to all systems at all scales and provide a reliable lens to explore systems, whether plants, human society or the biosphere. The students are able to witness and apply these patterns as thinking tools for understanding the world around them, and over time will learn to apply them to more complex systems and the impacts of human action.

The goal is that our students come to develop an intuitive, realistic understanding of the limits of our planet with the confidence and skills to be creative with that knowledge. We believe the program is important not only because it provides students with a whole range of practical and social skills relating to their basic needs now and into the future, but we also aim to give them a perceptive understanding of their place in the world – bringing them home to Earth ■

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(http://foodwebeducation.com)