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Keeping Earth Healthy Together

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Frederick Meijer Honors College

Winter 2021 Honors Senior Project

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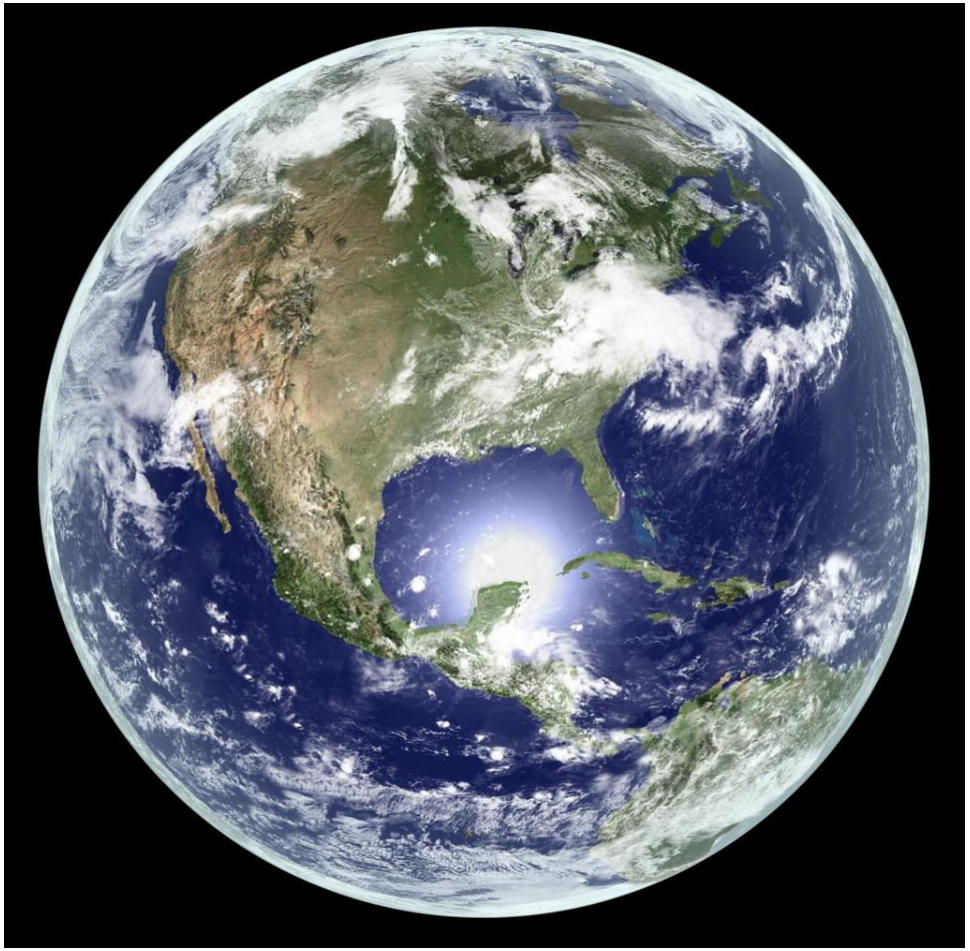


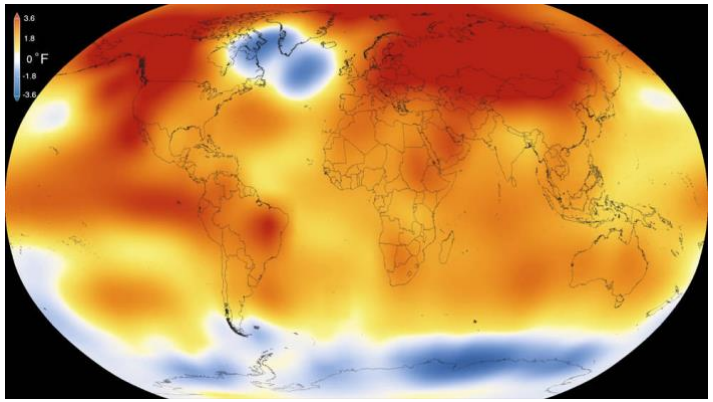
This planet we live on is so amazing! Earth has mountains and valleys and so much more to see! Our planet even gives us food and rain.

It is so much fun to enjoy all the earth has to offer. We all love the earth. But when you love something, you need to take care of it!

Sadly, not everyone takes care of the earth. For thousands of years, humans have worked in harmony with the earth. But since the creation of factories and modern technology, human actions are making the earth sick.

Do you love the earth and want to take care of it?

When you are a kid, it may seem like taking care of the earth is just for grown-ups. But that is not true at all! There are many easy things you can do to help keep the earth beautiful and healthy.



Cars, trucks, and factories use gas and coal for energy. These are called fossil fuels because they come from fossilized plants and animals from a long time ago.

The burning of gas or coal creates smoke. The smoke contains a gas called carbon dioxide. Carbon dioxide traps heat in the earth's atmosphere, this is called a greenhouse gas. An increase in carbon dioxide and other greenhouse gasses are making the earth warmer than it wants to be!

So how can we reduce greenhouse gasses? Go for walks and ride your bike! Ask your parents to do a family bike-ride to the ice-cream shop instead of driving! Driving less means that less harmful gasses will be in the air.

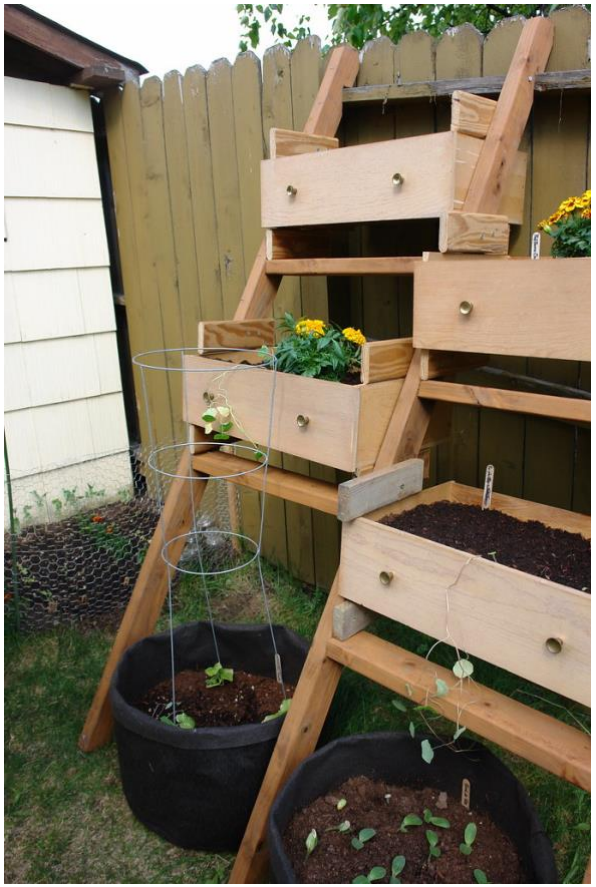
You have probably heard of "reduce, reuse, recycle" and that is super important too. Unfortunately, a lot of recycled items still end up in landfills. The most effective methods are reducing and reusing. A fun way to reduce and reuse in your everyday life is using reusable grocery bags and buy clothes or other items from second-hand stores! This REDUCES the number of new bags and new clothes made in factories by REUSING your own bags and other people's treasures.

One other way humans have hurt the earth is by putting harmful chemicals in earth's soil and water. To feed more people, many farmers use fertilizers and other chemicals to help food grow. After a big rain, these chemicals can be washed by the water and flow into rivers and hurt wildlife.

One way to encourage farmers to not use harmful chemicals is to find local farmers you trust!

One exciting program to get fresh produce from local farmers is called Community Supported Agriculture, or CSA's. In a CSA, you pay a farmer a yearly amount to get a bunch of fruits and veggies every week!

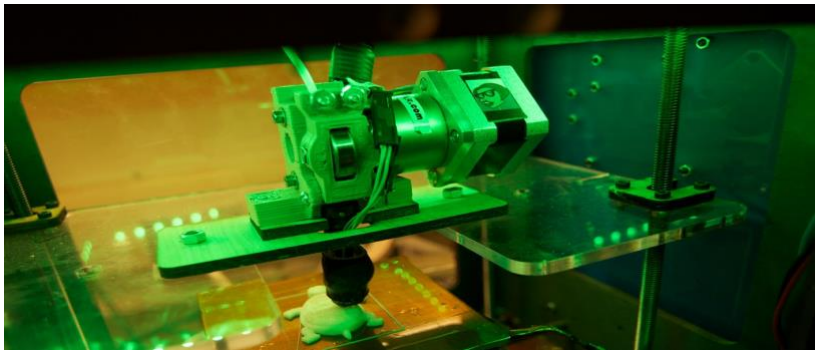
This is great for the environment because you can talk to the farmer and be confident that they are not putting anything bad into the earth. CSA's are so much fun because you get to try all kinds of new foods and recipes!



If you have the resources, it is also fun to grow your own produce at home! Ask a parent to help you get seeds, dirt, and find the right amount of sunlight. A home garden is healthy, yummy, and so much fun! Tip: you can even add food scraps like egg shells, fruits and vegetables to your dirt to give plants more nutrients. This is often called composting.

An important way to keep our earth healthy is to volunteer at community clean-ups! Sadly, many towns do not have many recourses to keep the city clean. It is up to volunteers like you to make your city and nearby cities a clean and safe place to live!

Try committing to picking up trash by your school or cleaning the street you live on a few times a year. Have a parent look up if there are any volunteer groups near you to help with!



There are also lots of jobs that you can think about being when you grow up. There are architects that design sustainable houses that use less energy. Sustainable means that something can last for a long time and not hurt the earth.

There are scientists that study chemicals and biology to keep our atmosphere and ecosystems safe. There are new inventions every day that make this world a better place and you can be a part of that change! Engineers design machines that can create less waste.

Consider being a city planner or work for a non-profit organization to create safe neighborhoods with access to clean food and water! Or an environmental lawyer that fights to protect our earth.

Forest Rangers manage forests and parks to keep them clean and safe. If you want to live in the country you can be a farmer that uses natural resources to make healthy food for your community.

There are so many impactful careers! But remember…

Don’t wait until you’re an adult to start making a difference. Start now! Encourage your family to get on board! Our earth is counting on you… and there is so much you can do!

Additional Reading for Parents

Parental companion piece to give ideas for how you and your kids can keep the earth healthy together!

Reduce, Reuse, Recycle

"Reduce, reuse and recycle" is of the most popular phrases in regard to keeping earth healthy, but how sustainable is it? Well that is a mixed answer. Most cities have recycling programs with many people believing they are doing their part in recycling juice jugs and paper. Those recycled materials can then be used by companies to create new products. However, studies have shown that the benefits of recycling decrease until a cut-off point is reached where recycling becomes environmentally and economically too expensive to achieve a net benefit compared to disposal (Huysveld, 2019). Recycling can be expensive and hard to maintain for long periods of time.

Recycling has other problems as well. Recycling in not infinite because the material breaks down over time both in quality and quantity (Huysveld, 2019). Once paper or plastic products are recycled two or three times, the fibers lose their strength and they are no good to create quality products anymore. Studies, unsurprisingly, have found that recycling system is imperfect. Some recycled material ends up in landfills anyway! So why do we use the phase "reduce, reuse, recycle" as a motivation to create a more sustainable society? The key here is to understand that producing less is more important than recycling. If recycling does not replace or prevent primary production, it only *delays* disposal (Zink, 2019). We need to focus on the reduce and reuse portion of the phrase.

You can help keep the earth healthy by *reducing* the number of products we consume to decrease the demand of product production (Zink, 2019). One key way to reduce your consumption is to perfect the art of *reusing* (Huysveld, 2019). Fortunately, sustainable practices don't have to change your entire life, and simple things can go a long way. A common way to reduce plastic waste is to use reusable grocery bags! This can drastically cut down on the wasted plastic bags in landfills. Other ideas include riding your bike or walking to work or school to reduce fuel consumption, finding local thrift stores to buy clothes and furniture from (and donate too!), and repurposing deli meat containers to store other household items. Consider joining a local Freecycle community to find items you want instead of getting those items new at the store. Freecycle is a circular economy system where people post things they don't need any more and someone in the community can take them for free (The Freecycle Network)! It keeps useable goods out of landfills and reduces consumption of new products (Aptekar, 2016).

Get involved in your community!

The most sustainable communities are made of people that care about their community and take ownership of their environment around them. Find local organizations to volunteer with. Most cities have community clean-ups that are run by volunteers in the area. Try adopting a highway or committing to cleaning your street in the spring and fall. Some poorer communities do not have governmental funds or programs to keep their cities clean (Anguelovski, 2014). Volunteering to clean parks and roads in these areas are vital for community sustainability and a more hospitable environment. Consider signing your kids up for outdoor programs to teach them about nature and how to protect it. Children's programs, such as Forest School in the UK and other programs based on Forest School, have many other benefits for kids including building social skills, problem solving skills, confidence, and curiosity.

Another simple way to create a more sustainable financial and environmental community is to buy locally! Buying local supports local businesses to improve the financial situations of your neighbors (Schrank, 2018). It is often associated with more positive work environments and has less harmful effects on the earth (Schoolman, 2020). Buying local means production and purchasing happen in the same area which eliminates fuel consumption and carbon emission due to transport trucks, planes, and ships (Schrank, 2018)(Schoolman, 2020). It is also a great way to get to build relationships with people in your area!

Community Supported Agriculture

The increase in booming cities and large food companies has led most Americans to become disconnected from where their food grows and the farmers that are growing it. The agriculture industry has become saturated with chemicals and fossil fuels (Schnell, 2007). Some farmers and consumers are taking steps to increase their education of their food, decrease harmful fossil fuel emissions and chemical runoff, and support local business (Schor & Thompson, 2014). Many Americans have turned to organic foods, but as the organic foods consumption boomed, the industry lost its sustainable roots and started to rely on fossil fuels and exploitive labor (Schnell, 2007). This is the opposite of what we want! New and creative routes are being taken to find new ways of ethical and sustainable food consumption (Schnell, 2007).

Community Supported Agriculture, or CSAs, are a great way to be involved in your community while helping the environment. Farmers that are a part of CSA's usually offer weekly produce from their farm throughout the growing season in turn for yearly membership payment to support the farm business (Schor & Thompson, 2014). This ensures that the farm will

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have financial support even if it is not a great harvest year. It also gives them an opportunity to feed the community without relying on environmentally unfriendly transportation to ship their products across the nation (Schor & Thompson, 2014).

One major benefit for you, the consumer, is to know exactly where your food is being grown, who is growing it, and how it is being processed. This transparent information is important for increasing consumer knowledge and trust. Other consumer benefits include eating food that has a fresh farm taste, making connections in the community, and getting to be creative in the kitchen with veggies you don't normally gravitate to at the supermarket. This is often referred to as reskilling in the kitchen and can help individuals find nutritious new meals for their families (Schor & Thompson, 2014). Many people participate in a CSA for environmental sustainability of lowing their carbon footprint and economic activism of supporting small businesses.

Additive Manufacturing

Additive Manufacturing (AM), commonly called 3D-printing is an industry that has started to gain momentum in the past 10 years in engineering, chemistry, and architecture sectors. This is a great career option for children who like science and care about the earth! With modern technologies, AM produces products layer by layer using various methods (Ngo, 2018). These methods include melting powder beds with a laser beam and excreting melted material from a nozzle. Additive manufacturing can create objects of metal, plastic, ceramic, concrete, and more. AM Companies have even started 3D-printing of affordable homes! There are many financial and environmental benefits to additive manufacturing over traditional methods, especially for metal products (Ngo, 2018). AM reduces waste in two ways: it requires less raw materials, used materials can easily be recycled and reused, and old additively manufactured parts can be repaired years later (Asgari, 2017).

In traditional metal casting methods, for instance, a product is carved from a larger block of metal. Most of the waste from this method is unusable. However, additive manufacturing does not let virtually any material go to waste because it uses the exact amount of raw material it takes to make the product. AM is also sustainable due to the ability to repair old products. It can fix a broken part (such as an airplane wing) by repairing the damaged region instead of throwing the entire part away and producing a brand new one (Asgari, 2017). Additive manufacturing for aerospace and transportation applications is also sustainable because the products are physically strong, chemically stable, and are lightweight (Ngo, 2018). Lightweight products are important because it reduces the fuel consumption necessary to run traditionally manufactured cars and airplanes.

Although 3D-printing is a great industry to pursue for a career, you can also buy one for your own! Consider doing projects to create reusable items for your own home!

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