STEM@CGI
SCIENCE - TECHNOLOGY - ENGINEERING - MATHEMATICS

LEARNING LINKS FOUNDATION

NITI Aayog | ATAL INNOVATION MISSION

STEM from Home

Reduce, Reuse, Recycle

Do you or your parents carry reusable bags when you go for vegetable or grocery shopping? Do you ensure that you take only that much which you can consume? What do you do with the notebooks of previous class that still has blank pages? Do you know that people around the world generate 1.3 billion tons of trash per year? Can you imagine the load this causes on our planet and the environment?

Here, we will explore the 4 R's of sustainable living– Review, Reduce, Reuse & Recycle.

Review: Observe and reflect on the waste generation patterns of the family. How much of non-degradable material is being used and thrown in the garbage?

Reduce: Which are the ways in which you can reduce the amount of waste generation in your homes?

Reuse: One time use plastics or other products that cannot be put to other uses after the main use is over, create an unnecessary burden on the environment. Can we adopt habits of reusing articles multiple times?

Recycle: Create something new and usable from an existing material or sets of materials

In this STEM Pack, you will code an animation in SCRATCH, create a compost project in a bottle and finally conduct an audit to track use of plastic in your home, and find innovative ways to reduce, reuse and recycle.

Main Activity: **Tree Life Simulator**

Introduction

Create a simulation that shows the impact of land management and deforestation on trees, wildlife, and the environment

This project focuses on three of the United Nations Sustainable Development Goals:

1. Responsible Consumption and Production
2. Climate Action
3. Life Below Water.

What You Will Need

- How to use clone blocks and random numbers to simulate a natural environment
- How to use > < operators to control a simulation
- How to program a simulation to help communicate an environmental issue

What you will learn

Hardware
A computer or tablet capable of running Scratch 3

Software
Scratch 3 (either online or offline)

Getting Started

Click here to get started

Bonus Activities

Activity 1: Magic in a Bottle- Composting

Introduction

Composting is a great way to reuse and recycle organic material and reduce the load on our landfills. In this activity you will learn how to generate compost through your own mini composting project. You will be able to observe the natural process of decomposition that will occur over several weeks. In this composting project you will create an environment to enable the recycling of nutrients back into the soil.

What You Will Learn

How microorganisms found in nature decompose organic materials through the process of decomposition or composting.

What You Will Need

1. Large (2 Litre) plastic bottle with cap.
2. Plastic plate/tray
3. Vegetable and fruit peels and scraps from the kitchen- cut into small pieces
4. 1 cup grass/ leaves
5. 2 cups garden soil
6. I cup pieces of newspaper torn into small bits
7. Water spray bottle
8. Scissors
9. Metal spoon
10. Pin / large needle

Getting Started

Access the activity guidelines here.

Challenge Activity: Lifecycle of Plastic

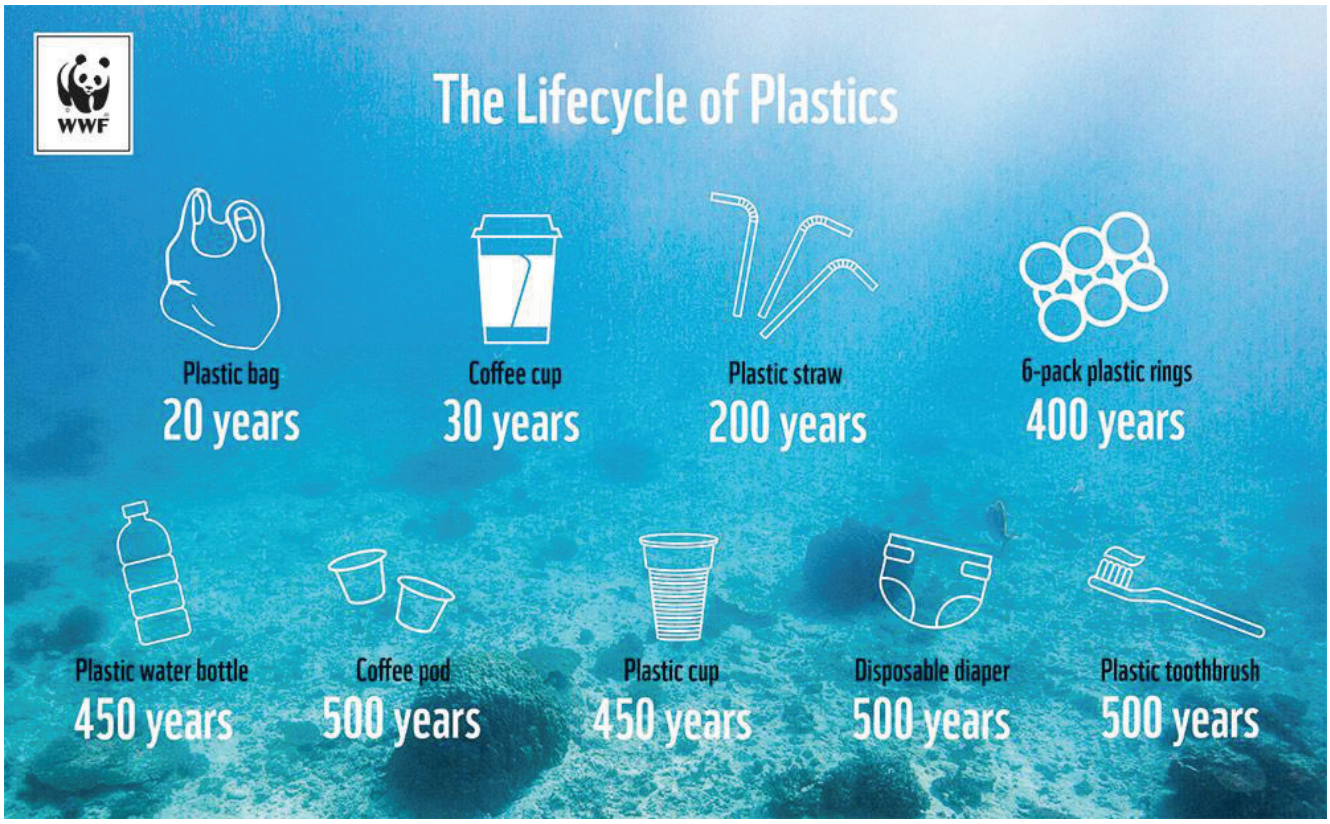
Plastic has only really existed for the last 60-70 years. However, in this short period of time it has managed to create a huge environmental problem, thanks to the indiscriminate use of the material. One of the advantages of plastic is that it is designed to last, but this same blessing is a curse as nearly all the plastic ever created still exists in some form today!

Look at the infographic below to understand the life cycle of commonly used plastic products. Imagine! The toothbrush you use and throw away today will last at least 500 years!

Your Challenge:

1. Create a system to audit the amount of plastic used and disposed in your home.
2. Implement this tracking system and map the results of your efforts.
    a. What are some of the ways you were able to reduce the usage of plastic?
    b. What are some of the innovative ways you reused the plastic waste in your home?
    c. Which of the measures you implemented worked the best?
3. Create a comparative chart across a month or so and share results.

Share your design, findings and tracking results by uploading a presentation. Your final submission can be presented digitally using Docs or Presentation software.



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