PCS EDventures!™

Making a Cleaner World:
How to Reduce E-Waste

Did you know that your cell phone is a treasure trove of precious materials? Many common household devices are filled with metals, plastics and more that can be recycled into new products.

In this discussion, you and your learners will explore e-waste and brainstorm ways to reduce the number of devices in landfills. Dive in to learn how to make a cleaner world!

HANDS-ON STEM EDUCATION

PCS

For over 30 years, PCS Edventures has inspired students to develop a passion for Science, Technology, Engineering and Mathematics (STEM), focusing our efforts on making learning and discovery a fun and interactive process for grades K-12.

- Classroom
- After-School
- Home Learning

STEAM Connections

Science: Earth, Physical & Life; Technology: Communication & Collaboration

Overview

Help students identify potential solutions to the issues surrounding electronic waste by discussing causes, effects and positive responses to e-waste.

Key Terms

E-Waste: discarded electrical or electronic devices.

Precious Materials: rare, naturally occurring materials that are used to make electronics.

Right-To-Repair: a movement in support of the legal ability to repair broken devices.

Background Information

Did you know that there can be 100 times more gold in a ton of mobile phones than in a ton of gold ore? Modern electronics are a treasure trove of rare, precious materials. However, a majority of old devices are thrown away. Reusing and recycling e-waste reduces the need to mine new precious materials. Additionally, keeping e-waste out of the landfill helps prevent toxic elements from contaminating soil and water supplies. The globe produces around 50 million tons of e-waste a year, and less than 20% of it is recycled. How can you and your learners help to turn unwanted devices into a gold mine?

Whole Group Discussion

Model a responsive classroom by starting your morning meeting, discussion time or special lesson with this question:

- **What do you do when your TV stops working?**

Answers will vary from calling a repair person to throwing it away. Follow the flow of the conversation, and ask follow-ups that lead towards a wider discussion of E-Waste.

- **What happens to the old TV when you throw it away and replace it?** (It goes to the landfill.)

- **Does the TV decompose like an apple core?** (No.)

- **What would happen if everyone in our town threw away their TVs, too?** (The waste stacks up.)

Unwanted electronic devices, like those old TVs, are called e-waste. Scientists say the world generates around 50 million tons of e-waste a year. Every year, dumps are filled with old and outdated electronics that cause pollution.

- **What is a cell phone made of?** (Metals, silicones, circuits, etc.)

- **Where do those materials come from?** (They're mined.)

- **Where do those materials go when you toss a phone?** (They end up in a landfill.)

- **So, what does the manufacturer need to do to create a new phone?** (Mine for the new materials.)

Many materials needed to create electronics are hard to come by. Precious materials like copper, iron, gold, silver and platinum take a lot of effort to pull out of the Earth. Mining for new materials requires fuel and chemicals that can cause pollution.

- **So, if throwing your TV away creates pollution, and making a new TV creates pollution, what can we as consumers do to help?** (Recycle, reuse or repair.)

Rather than tossing outdated or broken devices, we can recycle, reuse or repair them. Your broken TV might just need a new cord. That outdated phone is full of precious metals that can be used to create the next great technological advancement. Your old microwave might be perfect for another person's house. Maybe you can wait longer to upgrade your computer. What are some more ways you can reduce e-waste?

Check for Understanding

- What is E-Waste?

- Why is E-Waste a problem?

- How can you reduce your E-Waste?

Extensions:

If your learners are up for it, steer them towards a discussion on the Right To Repair.

It's in a business's interest to keep consumers purchasing upgrades every year. Many manufacturers try to limit a user's ability to repair devices, forcing them to replace what could be fixed. Those who support Right to Repair believe that they should be allowed to repair any device they have purchased. On the other hand, opponents to Right to Repair point out user safety concerns and economic issues. Have your learners research the pros and cons of Right to Repair from an environmental and economic view.

Looking for hands-on activities? Go to https://www.ewaste-education.com/3-5.html

This Discussion Script is modeled from PCS Edventures' turn-key STEAM Programs, housing everything you need to hop right into a lesson. Looking for more environmental engagement? Check out:


References:

Global E-Waste Surging: Up 21% in 5 Years. (July 2, 2020). United Nations University. Retrieved September 8, 2022 from https://unu.edu/media-relations/releases/global-e-waste-surging-up-21-in-5-years.html#info

Henneberry, B. (2021). What is Right to Repair (RTR)? Retrieved September 8, 2022 from https://www.thomasnet.com/articles/other/right-to-repair/

International E-Waste Day Gallery. (2021). WEEE Forum. Retrieved September 8, 2022 from https://weee-forum.org/iewd-gallery-2021/
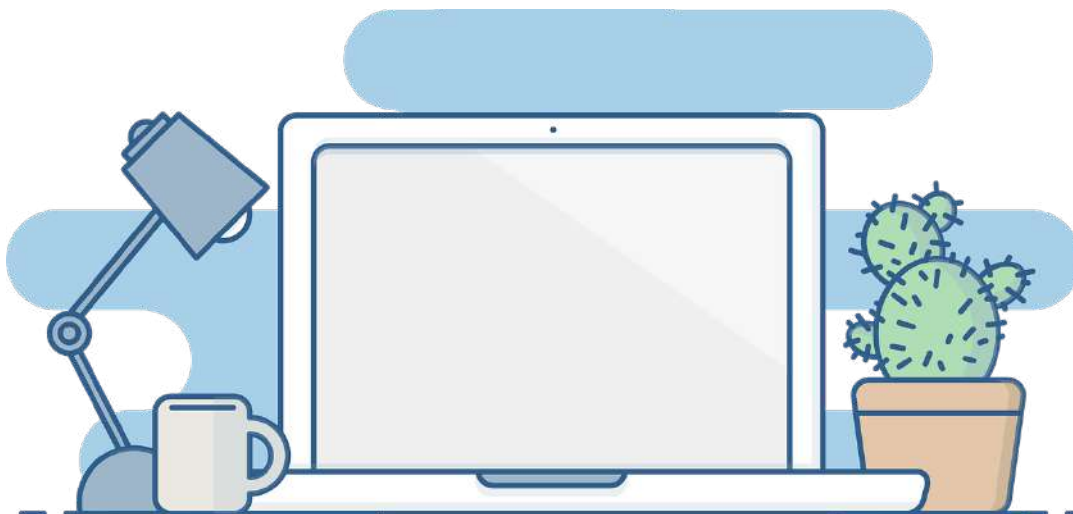
For more information, visit: https://edventures.com/collections
or contact a STEM Program Specialist at (800) 429-3110

PCS eDventures!™
Experts in Hands-On STEM Education