

# Greener Gadgets

## Dear Educator,

Today's kids are savvier than ever when it comes to electronics — the latest smartphone, streaming video, the newest apps. They also need to be savvy when it comes to understanding that electronics can be refurbished, reused, and recycled — and packaging can be recycled too. When recycled, consumer electronics contain metal, plastic, and glass that can be used in new products. That's why the Consumer Technology Association (CTA)<sup>™</sup>, the technology trade association representing the consumer electronics industry, has partnered with Young Minds Inspired (YMI) to create this free educational program based on CTA's consumer recycling initiative, GreenerGadgets.org. This lesson will help students and their families learn how to lessen the environmental impact of their technology choices.

Designed to support both National Science and Next Generation Science Standards, the program includes classroom activities encouraging students to better understand their responsibility as consumers in our increasingly technology-driven world. Using a favorite subject — technology — students will learn how to make smarter choices that promote a more sustainable future for the Earth.

Although the materials in this program are copyrighted, you may make as many copies as you need for your students and other educators in your school. Please share your thoughts about the program by returning the enclosed reply card or commenting online at [www.ymiclassroom.com/feedback-cta](http://www.ymiclassroom.com/feedback-cta). We depend on your feedback to continue providing free educational programs that make a real difference in students' lives.

Sincerely,  
Dr. Dominic Kinsley  
Editor in Chief, Young Minds Inspired

 is the only company developing free, creative and innovative classroom materials that is owned and directed by award-winning former teachers. View our website at [www.ymiclassroom.com](http://www.ymiclassroom.com) to send feedback and download more free programs. For questions, contact us toll-free at 1-800-859-8005 or by email at [feedback@ymiclassroom.com](mailto:feedback@ymiclassroom.com).

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## Target Audience

This science program is designed for students ages 9-12 in grades 4-6.

## Program Objectives

- Teach students to differentiate between renewable and non-renewable resources.
- Engage students in assessing the impact of recycling electronic waste and packaging on the environment.
- Help students analyze data and compare solutions for reducing waste through recycling.
- Empower students and their families to take action to recycle and shrink their environmental footprint.

## Program Components

- One-page teacher's guide in English and Spanish.
- Three reproducible student activity sheets in English and Spanish.
- A reproducible parent letter in English and Spanish.
- A colorful wall poster for display.
- A reply card for your feedback.
- **Note:** All program components can be downloaded in PDF at [www.ymiclassroom.com/cta](http://www.ymiclassroom.com/cta).

## How to Use This Program

Photocopy the teacher's guide and activity sheets before displaying the poster. Send copies of the parent letter home with your students when you begin the program. Visit [ymiclassroom.com/cta](http://ymiclassroom.com/cta) to review this program's alignment with National Science and Next Generation Science Standards.

## How to Use the Wall Poster

Display the poster to introduce the program and refer to it as students complete activities. Guide them to understand that the recycling process featured on the poster relies on them: *Students and parents* visit [GreenerGadgets.org](http://GreenerGadgets.org) to find a *Local Recycling Drop-off Location*, where recyclables are sent to a responsible *Third-Party Certified Recycler*, who separates them to send to *Companies That Process Parts* to be recycled into new forms, which *Manufacturers* then use to create products purchased from *Retailers*.

## Activity 1 Completing the Circle

**Part 1.** Distribute the activity sheets. After students complete Part 1, review the answers together: 1-cell phone; 2-glass bottle; 3-cardboard box; 4-soda can; 5-printer cartridges; 6-video game console; 7-banana; 8-plastic carton; 9-computer. Renewable resources-3, 7; non-renewable resources-1, 2, 4, 5, 6, 8, 9.

**Part 2.** Lead a class discussion on ways students can complete the recycling circle, pointing out that your students can help solve the e-waste problem. For example, a computer (made from mostly non-renewable resources) could be treated as follows:

- **Reduce:** Use the computer as long as possible and maintain it through careful handling, software upgrades, and replacement parts.
- **Reuse:** Donate a still-usable computer to a family member, friend, school, or other organization when no longer needed.
- **Recycle:** Take the computer to a responsible e-waste recycler to reuse parts when possible and recover non-renewable resources like metal. Recycle the computer's packaging when buying a new computer.

## Activity 2 Recycling By the Numbers

Distribute the activity sheets. Have students complete Part 1 in class (**Answers:** 1-a; 2-d; 3-b; 4-c; 5-e; for green design, all but 2 and 9 are green characteristics) and Part 2 at home. Have students return their papers to class to share family recycling goals and to characterize their lists by graphing renewable vs. non-renewable materials by recycling categories (e.g., paper, plastic, metal, electronic components, etc.), and then determining class percentages for each.

## Activity 3 Be a Good eNeighbor

Distribute the activity sheets. Have students review the information and list 5 reasons to recycle, then have them work individually or in teams to choose a method and complete the *Take eAction!* campaign activity. If your school's tech policies permit, have students include existing social media accounts in their campaigns, or launch a new account for this activity. Students can also post to #GreenerGadgets (see [twitter.com/hashtag/greenergadgets](https://twitter.com/hashtag/greenergadgets)). You might even organize a competition among classes or grade levels participating in the campaign by challenging students to a friendly Tweet-off to see who gets the most followers! **Note:** Most social media prohibit direct use by children under 13 years old. An adult must control any student social media campaign.

Visit [GreenerGadgets.org](http://GreenerGadgets.org) to find a list of local responsible e-waste collectors who can work with you to implement the campaign.

Consumer  
Technology  
Association<sup>™</sup>



# Completing the Circle



**Hey kids! It's me, Earth!** I'm all about recycling the planet's waste through decomposition and other natural processes, but I need your help to recycle the waste that people create.



You may have noticed that not everything you consider trash has this mark. In that case, what are people supposed to do? It starts with understanding the difference between renewable and non-renewable resources.

## Part 1.

**Renewable resources** are things that are renewed within a relatively short period of time or may never run out, such as plants, animals, sun, wind, air, water, etc.



**Non-renewable resources** are things that are renewed over extremely long periods of time, from hundreds to millions of years, or that are available in fixed amounts, such as minerals and fossil fuels.

Some products you might use are listed below. Unscramble their names and then write an "R" if they come from renewable resources or an "NR" if they come from non-renewable resources.

Product	R or NR?
1. llec nohpe c _ _ l _ _ h _ _ _	___
2. lsasg lttboe _ _ a _ _ b _ _ t _ _	___
3. bdarcdrao xbo _ _ r _ b _ _ r d _ o _	___
4. dosa nac _ o _ _ a _	___
5. rniptre tdgrarcise _ r _ _ t _ _ r _ r _ _ e _	___
6. dveio mgea _ i _ _ o _ a _ e	___
lsonceo _ _ n _ _ e	___
7. nanbaa _ _ _ a _ _	___
8. ticlpsa tonarc _ l _ s _ _ c _ _ t _ _	___
9. pucomert _ _ _ p _ _ _	___

**Good News!** What's lighter, smaller, and better? Consumer electronics, that's what! Thanks to innovation in product design and manufacturing, the amount of non-renewable resources in consumer electronics has actually *decreased*. Not only are we doing a better job of completing the circle, but we're also making that circle smaller!



## Part 2.

Listed at right are ideas to help lessen the impact of waste on the environment. Add an idea of your own for each. Now choose one product from each resource category ("R" and "NR") from Part 1. Follow your teacher's directions to determine a "future" for each one.



**Reduce** by finding ways to create less waste:

1. Download or stream music and videos to avoid the need for packaging.

Idea 2. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



**Reuse** by

finding new uses for old items:

1. Donate your old but still-working computer to a charity.

Idea 2. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



**Recycle**

old products into new ones:

1. Separate recyclables from your other trash.

Idea 2. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

# Recycling By the Numbers

## Part 1.

How much do you know about the amount of trash people create? Match the following figures with the facts shown below.

**Figures**

1. 4.40 lbs.
2. 41.7%
3. 1.4 million tons
4. 89 million tons
5. 52.6%

**Facts**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Facts\***

- a. Amount of trash generated by one person per day in the U.S.
- b. Weight of total consumer electronics recycled in 2014.
- c. Amount of common waste, including yard waste, glass, plastic, paper, metals, and electronics, recycled and composted in the U.S. in 2014.
- d. Percentage of discarded consumer electronics that were recycled in 2014.
- e. Percentage of U.S. trash that was buried in landfills in 2014.

## Tech Manufacturers Lead the Way!

Improvements in technology now require less materials and prevent more e-waste from entering the waste stream than previously. Mark the boxes below that you think identify green design characteristics.

- 1. Use less hazardous materials to manufacture
- 2. Are painted green
- 3. Designed for longer life
- 4. Comes in recyclable packaging
- 5. Smaller, lighter, and more functional
- 6. Can be repaired and reused multiple times during the life of the product
- 7. Are easy to disassemble
- 8. Require less extraction of natural resources
- 9. Made of magic dust
- 10. Designed to use less energy when in use



## Part 2.

How do your family's recycling numbers add up? Take this sheet home to list 5 products you or another family member plan to throw away. Products might include items from your trash or an old item you no longer use. At least three of the five should be electronics, such as a television, cell phone, etc. You can visit GreenerGadgets.org for ideas. Record the recycling action you might take for that item below.



**Product**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

**Reuse/Recycling Action To Be Taken**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Dear Parents,**

Your child is participating in a free educational program from the Consumer Technology Association (CTA)<sup>™</sup> and curriculum specialists Young Minds Inspired (YMI) on keeping the environment healthy through electronics recycling. Help your child complete this part of the activity at home, then ask him or her to return the activity sheet to school.

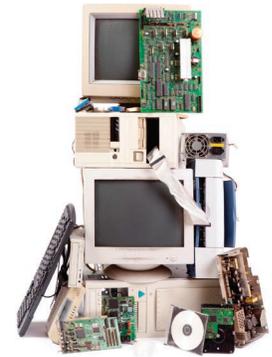
**Take action!** Set a family goal to recycle as many of the products and their packaging listed above as possible! Visit CTA's GreenerGadgets.org, where you can quickly and easily locate a responsible electronics recycling collector near you.

\*source: epa.gov

# Be a Good eNeighbor

Recycling electronic devices that are broken or are no longer used is called recycling. Computers, keyboards, TVs, mobile devices, and tablets are just a few examples. Here are some reasons why you should not just throw your old electronics or their packaging away.

- Products destined to be electronic waste (or e-waste) are often made from non-renewable resources.
- E-waste can be hazardous to the environment. Handled the wrong way, e-waste can contaminate the soil, ground water, and streams. The process of responsible recycling protects Earth's natural resources, including humans and animals, from the effects of this harmful pollution.
- The materials generated by recycling are still useful. Centers devoted to recycling collect e-waste from the public and recycle the parts in many different ways.



- Most packaging for electronics can be recycled in your cart or bin at curbside and can be turned into new packaging or products. Look for the recycling symbol (shown at left) on boxes, protective inserts, plastic film, etc., and follow your local recycling instructions.

**Take eAction!** Follow your teacher's directions to compile a class list of 10 reasons to recycle. Then create a letter, poster, video, text, tweet, song, poem, or other communication method to tell your family or community members about recycling and why it is important.

This is a great opportunity to link in to your class or school blog or Twitter account to tap into the power of social media! Take selfies of your recycling efforts at home or at school that your teacher can post, along with participating in a class Twitter account at #GreenerGadgets if your teacher directs it. You can also encourage your parents to post pictures of your family's recycling actions on their social media accounts.

Use the space below, plus additional paper or your computer if needed, to create a draft of your presentation.



## Here's my idea:

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**It's easy to recycle! Visit [GreenerGadgets.org](http://GreenerGadgets.org) to find a responsible electronics recycler near you!**

# Live Green Buy Green Recycle Responsibly



Earth's natural renewable and non-renewable resources are needed to create the products we use every day.



## In today's digital age, being green means:

- **Live Green!** Be efficient with your energy use and unplug chargers and devices when they are not in use.
- **Buy Green!** Buy refurbished products and ENERGY STAR® products. The ENERGY STAR label means the product is designed for efficiency.
- **Recycle Responsibly!** Visit GreenerGadgets.org to find a responsible e-waste recycling center near you. Recycle packaging at curbside or at a local recycling center.

We help protect the Earth's systems when we recycle these products



**Sign up now to take the pledge to Live Green - Buy Green - Recycle Responsibly!**

\_\_\_\_\_

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\_\_\_\_\_

## Dear Parents,

Your child is currently studying a free curriculum program on recycling provided by the Consumer Technology Association (CTA)<sup>™</sup> and curriculum specialists Young Minds Inspired (YMI). Part of the program involves reaching out to families to help extend learning into the home. We know that children can feel especially empowered when helping their families live a greener lifestyle, and this curriculum is designed to help them discover ways to do just that.



CTA is the technology trade association representing the \$321 billion U.S. consumer technology industry and more than 2,200 companies. One long-term goal of our industry for consumers is to make recycling electronics as easy as purchasing them. That's why CTA has developed online tools for consumers to reduce their environmental footprint at GreenerGadgets.org. Here are a few of the resources you can find there:



- **Consumer Electronics Energy Calculator.** This easy-to-use calculator helps you determine the impact of electronics use on your wallet by the month and year.
- **Recycling Electronics.** This service makes finding an environmentally-friendly electronics recycling center near you as easy as typing in your zip code. The recycling list includes industry programs that practice strict standards and use third-party certified recyclers, providing you with assurance that your device will be safely recycled.

- **Green Tips.** At the *Living Green* and *Buying Green* links, you'll find many tips on ways to lower both your energy bill and your energy consumption.
- **So Much More.** Lists of CTA members and industry partners with their own recycling programs, some of which even offer you money back for your efforts...advice on what to do if your consumer electronics product is still in good condition, but you no longer need it...tips on recycling packaging... as well as other helpful sites.

Visit GreenerGadgets.org today to find out how you can help your family save money and do something good for the planet at the same time. It's easy!

Sincerely,  
Walter Alcorn  
Vice President, Environmental Affairs and Industry Sustainability  
Consumer Technology Association

Consumer  
Technology  
Association<sup>™</sup>

  
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## Apreciados padres:

Su hijo(a) está cursando actualmente un programa de estudios gratuito sobre reciclaje de electrónica ofrecido por la Asociación de Tecnología de Consumo (*Consumer Technology Association*, CTA™) y especialistas del plan de estudios de Young Minds Inspired (YMI).

Como parte del programa nos ponemos en contacto con las familias para ayudar a llevar el aprendizaje a los hogares. Sabemos que los niños pueden sentirse especialmente empoderados cuando ayudan a sus familias a vivir un estilo de vida más ecológico y este programa de estudios ha sido diseñado para ayudarles a descubrir maneras de hacer precisamente esto.

La CTA es la asociación del ramo de la tecnología que representa a la industria de la tecnología de consumo de los Estados Unidos, un negocio de 321 mil millones de dólares y más de 2,200 compañías. Un objetivo a largo plazo de nuestra industria para los consumidores es que el reciclaje de los productos electrónicos sea tan fácil como el comprarlos. Es por ello que CTA ha creado herramientas en Internet para que los consumidores reduzcan su huella en el medio ambiente en GreenerGadgets.org. Estos son algunos de los recursos que puede encontrar ahí:



- **Calculadora de energía de productos electrónicos de consumo.** Esta calculadora fácil de usar le ayuda a determinar el impacto del uso de la electrónica en su cartera al mes y al año.

- **Reciclaje de electrónica.** Este servicio hace que encontrar un centro ecológico de reciclaje de desechos electrónicos cerca de usted sea tan sencillo como escribir su código postal. La lista de reciclaje de electrónica incluye programas de la industria que practican estándares estrictos y utilizan compañías de reciclaje certificadas independientes, lo cual le garantiza que su dispositivo se reciclará de forma segura.

- **Consejos ecológicos.** En los enlaces *Living Green* (*Viva de manera ecológica*) y *Buying Green* (*Compre productos ecológicos*), encontrará muchos consejos sobre maneras de reducir su factura de energía y su consumo de energía.

- **Mucho más.** Listas de miembros de la CTA y socios de la industria con sus propios programas de reciclaje de electrónica, algunos de los cuales incluso le devuelven dinero por sus esfuerzos... asesoramiento sobre qué hacer si su producto electrónico de consumo sigue estando en buen estado pero ya no lo necesita... consejos sobre cómo reciclar los empaques... así como enlaces a otros sitios útiles.

Visite hoy GreenerGadgets.org para averiguar cómo puede ayudar a su familia a ahorrar dinero y, al mismo tiempo, hacer algo bueno por el planeta. Es sencillo.

Atentamente,  
Walter Alcorn

Vicepresidente, Asuntos Medioambientales y Sustentabilidad de la Industria  
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