

TECHNOEarth

Teacher Guide

Lessons for Middle & High School Students: Grades 6-9



Technology Course using Google Apps

Design an interactive infographic
about an environmental issue.

In this course, students become environmental stewards. They design an interactive infographic that informs the public about an important issue. The web-based publication will outline the cause, harmful effects, and solutions. It will also include a rotating slide deck that summarizes the stakeholders and highlights interesting facts. To engage viewers, a thematic map will pinpoint where the problem is happening. Upon completion, students will inspire others to get involved by sharing their findings at an Earth Keeper's Conference.

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Introduction

This section provides valuable information about teaching TechnoEarth. It includes a description of the Teacher Guide, as well as an overview of the course. In addition, there are ideas for implementation and technology integration.

For additional guidance, open the course in TechnoHub and select Get Started to access preparatory steps, resource list, and scheduling timetable.

[How to Use this Guide](#)

[Course Overview](#)

[Implementation and Technology Integration Ideas](#)

How to Use This Guide

This Teacher Guide contains the following:

Getting Started – This section contains a course description, as well as ideas for implementation.

Course Instructions – The course is comprised of six sessions, each focused on a problem-solving task that aligns with the project theme. Each session includes assignments that break down the task into manageable steps. The components of each session are as follows:

- Overview – An explanation of the session activities and their purpose.
- Materials – A list of handouts, sample files, templates, and teacher resource materials needed to teach the session.
- Teaching Strategies – Instructional methods recommended for teaching the activities.
- Lesson Plan – A detailed list of each step in the session.
- Learning Objectives – A summary of the content knowledge and technical skills taught throughout the session.
- Assignments – A session consists of assignments completed by students. Actions to be performed on the computer by the student are indicated with a triangle (▷). Background information is indicated with a dash (–).
- Review – A session review contains a list of fill-in-the-blank, multiple choice, or short-answer questions intended to review terminology and tools. (answers included).
- Skill Review – An additional assignment intended to review Internet search or design skills (includes completed sample).
- Extension Activity – An additional activity that relates to the problem-solving task presented in the session.

Appendices – this section contains additional information or materials including the following resources.

- Assessment Tools – Skill summary and marking sheet to evaluate the infographic.
- ISTE Correlation – A summary of learning outcomes.
- Glossary – A definition of each term.
- Contact Information – How to contact TechnoKids Inc. for curriculum support.

TechnoEarth Overview

Introduction to TechnoEarth

In this course, students become environmental stewards. They design an interactive infographic that informs the public about an important issue. The web-based publication will outline the cause, harmful effects, and solutions. It will also include a rotating slide deck that summarizes the stakeholders and highlights interesting facts. To engage viewers, a thematic map will pinpoint where the problem is happening. Upon completion, students will inspire others to get involved by sharing their findings at an Earth Keeper's Conference.



Students complete the following tasks:

- In Session 1, students become environmental stewards. They prepare to create an infographic that informs the public about an important issue. To start, they study example publications to gain an understanding of the content and design elements. Next, they research a topic including cause, effects, interesting facts, location, stakeholders, and solutions. A reference list tracks sources of information. By the end of the session, students complete a checklist to verify they are ready to design their infographic.
- In Session 2, students begin to build their infographic using Google Sites. They introduce an environmental issue, describe the cause, and illustrate harmful effects. An emphasis is placed upon conveying information concisely using catchy headings and simple clip art. Instructions direct students to chunk their data into sections using color and dividers.
- In Session 3, students create a rotating slide deck using Google Slides. It will emphasize interesting facts and outline stakeholders. To start, students use a big number to highlight the scale of the problem. Next, they point out an important detail using colorful word art. Afterwards, they construct a diagram that summarizes who has a stake. Upon completion, the slide deck is inserted into the infographic and set to automatically play. Instantly the viewer should be able to grasp the scope of the environmental issue.
- In Session 4, students produce a thematic map using Google My Maps. It will pinpoint locations where the environmental issue is happening. The places could be worst offenders, best stewards, disaster sites, at-risk regions, successful conservation projects, or legally protected areas. Each marker will display an interesting fact and a photo. The map will be inserted into the infographic allowing viewers to explore and learn about the topic.
- In Session 5, students illustrate solutions to the environmental issues by designing their own icons using Google Drawings. Each image will be a simple representation made by combining shapes, word art, and cropped images. The original artwork will be inserted into the infographic with an explanation. A link to an advocacy group will invite viewers to get involved.
- In Session 6, students raise awareness about an environmental issue. They publish their infographic using Google Sites. Afterwards, they share their infographic at an Earth Keeper's Conference.

Technology Integration Ideas

TechnoEarth is a cross-curricular unit that integrates Google applications into curriculum. In this course, learners become environmental stewards. They create an infographic about an important issue. The publication is shared with others to raise awareness. The activities blend technology into geography, science, language arts, and visual arts. Lessons are ideal for middle and high school students. Below are some suggestions for implementing TechnoEarth:

- *Information, Communication, and Technology Skills:* Teach TechnoEarth as part of a technology course. The activities in TechnoEarth combine multiple Google applications to produce the infographic. This allows students to transfer their skills from one learning task to the next. It also demonstrates the practical use of each application and shows how they can be combined to produce a final product. Refer to their use:
 - Google Docs organizes environmental research
 - Google Sites produces the infographic by summarizing information in sections
 - Google Slides creates a rotating slide deck of interesting facts and stakeholders
 - Google Sheets charts data using a scorecard
 - Google My Maps pinpoints important locations on a customized map
 - Google Drawings illustrates a concept with the creation of an original icon

- *Geography:* Include TechnoEarth as part of a geography class. By creating an infographic about an environmental topic, students explore the connection between human activity and the natural environment. They summarize information about the cause, harmful effects, stakeholders, location, and solutions. This investigation fosters an understanding of the importance of stewardship and sustainability.

- *Science:* Use the lessons in TechnoEarth as part of an environmental unit. It could be integrated into many areas of study including biodiversity, energy, ecosystems, pollution, conservation, or water systems. The infographic demonstrates learning in a meaningful way.

- *Language Arts:* An emphasis in TechnoEarth is on research and communication skills. Support is given to boost students' search strategies, paraphrasing techniques, and ability to organize data. Interwoven through the activities are hints to convey a simplified message by combining text and images effectively.

- *Visual Arts:* Target visual arts learning outcomes with TechnoEarth. Graphic design is an important element of the lessons. Students apply their creativity to organize information and arrange content. Moreover, they use digital paint tools to produce original artwork.

Understand the Big Picture

Not sure where to integrate TechnoEarth? There are three samples provided for this course including infographics about acid rain, coral bleaching, and the seal hunt. These web-based publications provide ideas on how you can include these activities in your curriculum.



Session 1

Become an Earth Keeper

In this session, students become environmental stewards. They prepare to create an infographic that informs the public about an important issue. To start, they study example publications to gain an understanding of the content and design elements. Next, they research a topic including cause, effects, interesting facts, location, stakeholders, and solutions. A reference list tracks sources of information. By the end of the session, students complete a checklist to verify they are ready to begin to design their infographic.

Assignment 1: What Is Environmental Stewardship?

Assignment 2: What Is an Infographic?

Assignment 3: Pick an Environmental Topic

Assignment 4: Research the Issue

Assignment 5: Pinpoint the Location

Session 1 Skill Review 1: Boost Search Strategies

Session 1 Skill Review 2: Reference Sources of Information

Session 1 Extension Activity 1: Recognize Bias

Session 1 Extension Activity 2: Assess Trustworthiness of a Site

Session 1 Getting Started

Overview

In this session, students become environmental stewards. They prepare to create an infographic that informs the public about an important issue. To start, they study example publications to gain an understanding of the content and design elements. Next, they research a topic including cause, effects, interesting facts, location, stakeholders, and solutions. A reference list tracks sources of information. By the end of the session, students complete a checklist to verify they are ready to design their infographic.

Materials

- Chrome web browser
- Assignments 1 – 5
- Research Outline template
- Research Checklist
- Example infographics
- Environmental Fact Sheets:
acid rain, clear cutting, endangered reefs, fuel emissions, garbage, invasive species, mountaintop mining, nuclear energy, oil sands, overfishing, plastic pollution, poaching, water consumption
- Session 1 Skill Review A: Boost Search Strategies
- Session 1 Skill Review B: Reference Sources of Information
- Session 1 Extension Activity A: Recognize Bias
- Session 1 Extension Activity B: Assess Trustworthiness of a Site

Teacher Preparation

(Refer to the *Prepare to Teach* section of this course for instructions)

- Make the files in the Earth folder available to students. It has links to example infographics, as well as the *Research Outline* template.
- Determine the competence level of students to conduct Internet research efficiently. Refer to the skill reviews and extension activities at the end of this Session. These optional activities can be used to strengthen Internet search skills.
- Review the fact sheets. They are one-page documents that summarize information on a range of environmental topics. These can be used to support learning.

Teaching Strategy

In this course, students design an interactive infographic that raises awareness about an environmental issue. Explain the TechnoEarth scenario:

In this course, you raise awareness about an environmental issue by designing an interactive infographic. An infographic is a one-page document that uses simple imagery and text to convey information. Your publication will outline the cause, harmful effects, and solutions. It will also include a rotating slide deck that summarizes the stakeholders and highlights interesting facts. To engage viewers, a thematic map will pinpoint where the problem is occurring. Upon completion, you will inspire others to get involved by sharing your findings at an Earth Keeper's Conference.



In this session, students conduct research on an environmental topic. Explain session scenario:

In this session, you become an environmental steward. This is someone that takes care of the Earth and inspires others to act. To begin, you read about current events to discover issues of personal interest. Next, you study example infographics to notice the unique way simple images and text convey information. Afterwards, a brainstorming activity helps you to select a topic. You then conduct research and organize the findings using a template. By the end of this session, you should be ready to construct your infographic.

Assignment 1: What Is Environmental Stewardship?

In this assignment, students become environmental stewards. They read about the importance of a healthy environment and stewardship. To gain an understanding of current events, they read Google News headlines. The goal is to familiarize students with local, national, and international environmental concerns.

This activity can be completed independently or as a whole group. Instruct students to consider areas of interest as they read the headlines. This will help them in Assignment 3 to brainstorm an environmental issue for their infographic. You may wish to make a class list of headlines to broaden students' knowledge of problems, conservation efforts, and use of natural resources.

Introduce the following terminology:

- *stewardship*: responsibility for something of importance
- *sustainable*: able to continue for a long period of time with no decline

Assignment 2: What Is an Infographic?

In this assignment, students study an infographic to gain an understanding of how it can be used to communicate information effectively. They answer questions about the content and layout. Additional publications are available in the *Samples* folder.

Introduce the following terminology.

- *infographic*: one-page publication that summarizes a topic in a graphic way using simple icons, symbols, maps, and charts to explain the data.

The infographic is titled "Acid Rain" and features several sections:

- Header:** "Acid Rain" with a dark, rainy background.
- We Have a Problem:** A section with a camera icon and a scorecard showing "Normal rain... 4.2 PH of acid rain".
- DAMAGED FORESTS:** A section with a row of trees, some of which are brown and dead.
- FOG in polluted areas may be MORE ACIDIC than rain. ACID FOG!** A section with a map of the United States showing a red location marker.
- SOLUTIONS:** Two circular icons: one for the "ENVIRONMENTAL PROTECTION AGENCY" (EPA) and one for "SOLAR ENERGY".
- SOURCES:** A section at the bottom with a small text box.

 Callouts on the right side of the infographic explain design elements:

- IMAGE CAROUSEL & SCORECARD:** Display photos or highlight an important value using Sheets. (Session 2 and 4 Extension Activities)
- EFFECTS:** Identify two harmful effects using Layouts. Represent the problem with clip art. (Session 2 – Assignment 8-9)
- LOCATION:** Pinpoint places related to the issue using Maps. Customize the marker. (Session 4 – Assignments 14-15)

 Callouts on the left side of the infographic explain content sections:

- HEADER:** Introduce the topic. Include a solid color or simple image as the background. (Session 2 – Assignment 6)
- CAUSE:** Describe the issue and explain why it is happening. Adjust the text style and format the section. (Session 2 – Assignment 7)
- INTERESTING FACTS & STAKEHOLDERS:** Create a rotating slide deck in Slides. Use numbers, Word art, shapes, and symbols to emphasize data. (Session 3 – Assignments 10-13)
- SOLUTIONS:** Design icons to represent solutions using Drawings. (Session 5 – Assignments 16-17)
- SOURCES:** Cite sources of information using a collapsible text box. (Session 5 Extension Activity)

The infographic is designed using Sites.

Assignment 3: Pick an Environmental Topic

In this assignment, students brainstorm a topic for their infographic. They complete a mind map that includes categories of environmental issues. You may wish to complete the activity as a whole group to produce a master list. Use the suggestions below if students are stuck for ideas.

Suggestions for selecting a topic:

- ✓ Pick a topic of personal interest
- ✓ Look for a local, national, or international area of concern
- ✓ Make a connection with topics being studied in other subject areas
- ✓ Narrow a broad topic to focus on a specific issue
- ✓ Expand brainstorming beyond the mind map environmental categories

Topic ideas:

Environmental Issues			
carbon emissions	fossil fuels	overfishing	water pollution
greenhouse gases	nuclear energy	shark finning	water consumption
melting polar ice caps	coal power	bottom trawling	water bulk removal
ozone depletion	hydroelectric power	bycatch	ocean deoxygenation
melting glaciers	natural gas	ghost nets	ocean acidification
rising sea levels	radiation spills	whaling	watershed
air pollution	fuel emissions	seal hunt	algae blooms
smog	renewable energy	endangered reefs	agricultural pollution
acid rain	oil sands	coral bleaching	overgrazing
urban sprawl	oil drilling	biodiversity loss	irrigation
garbage	oil spills	habitat destruction	slash and burn
disposal of waste	strip mining	cave conservation	pesticide drift
toxic waste	mountaintop mining	desert conservation	soil contamination
landfills	subsurface mining	poaching	soil degradation
industrial waste	acid mine drainage	endangered species	deforestation
littering	light pollution	wildlife trade	logging
plastic pollution	invasive species	predator loss	clear cutting
water bottles	common carp	light pollution	natural disasters
shopping bags	kudzu invasion	noise pollution	wildfires

words in bold have a fact card

Strengthen Internet Search Skills Prior to Assignment 4:

Environmental topics are complicated issues. Each stakeholder will have a website outlining their viewpoint. Your students need to be able to find high quality information quickly, cite the source, recognize bias, and determine trustworthiness. Refer to the skill reviews and extension activities at the end of this Session. These can be assigned to the class or individual students.



Do your students need to improve their...?	If yes, then do this activity:
<i>efficiency of online search skills</i>	<i>Skill Review: Boost Search Strategies</i>
<i>ability to find information for citing the source</i>	<i>Skill Review: Reference Sources of Information</i>
<i>understanding of bias and how it slants data</i>	<i>Extension Activity Recognize Bias</i>
<i>judgment used to verify if an article is reliable</i>	<i>Extension Activity Assess Trustworthiness of a Site</i>

Assignment 4: Research the Issue

In this assignment, students research their environmental issue. They collect facts about the cause, effects, interesting facts, stakeholders, and solutions. The information is categorized using a Google Docs template. Note that all the sections of the outline are to be completed, except *Location*, which is done in the next assignment.

Introduce the following terminology:

- *stakeholder*: person, business, group, or organization who have an interest in the issue
- *source*: website from which the data was found

Research Tips:

- *Use Expert Sites*: Many people have opinions about environmental issues. However, when gathering facts, it is important to use websites from experts such as government websites, educational institutions, environmental organizations, associations, and encyclopedias.
- *Be Selective*: An infographic has limited text and relies primarily on images to convey information. Caution students to copy and paste only brief excerpts from Internet sites. This will make it easier to condense and rephrase the data later.
- *Bookmark Websites*: You may want to teach students how to bookmark informative websites. That way they can return to them later if they need more facts.
- *Record Only the Web Address*: If your class has limited time for research, you may wish to restrict citing of the source to only the website address.
- *Cite the Source*: If you have specific formatting requirements for references, for example APA or MLA format, let students know before beginning. Provide a sample.
- *Refer to Fact Sheets*: Environmental topics are complicated issues. Internet sites tend to be written with an elevated level of scientific detail and complex vocabulary. Use the Fact Sheets for simpler summary outlines to address individual student needs.

Assignment 5: Pinpoint the Location

In this assignment, students highlight the scope of the environmental issue. They identify where it is happening in the world. This data is used to create an interactive map in Session 4.

Location Tips:

- *Demonstrate an Interactive Map*: Show students the sampler, [Acid Rain](#). Draw attention to the content of each marker, including a description and photo.
- *Discuss the Range of Possibilities*: Each environmental issue is unique. The locations can be the worst offenders or best stewards. It could pinpoint a disaster site, at-risk region, main contributor, organization, successful environmental project, or stakeholder.
- *Find a Specific Place*: A country name is often too broad. To be able to accurately pin the map marker students should identify the state, city, or region.
- *Type of Interesting Fact*: For two of the places, students must provide an interesting fact. It can be numerical, stating the size of the problem, or factual, explaining the cause, harmful effects, or solution efforts that are being made.

Research Checklist

Encourage your students to verify they are prepared to build their infographic. The checklist is available as a digital file in the *Assessment* folder if you would like to customize the criteria.

Lesson Plan

Assignment 1: What Is Environmental Stewardship?

- Consider reasons why people should care about the environment.
- Read about the role of an environmental steward.
- Browse current events about environmental topics.
- List three headlines with environmental concerns that are of personal interest.

Assignment 2: What Is an Infographic?

- Read about infographics and study a picture that summarizes its main features.
- Find out why infographics are used to communicate.
- Explore an infographic. Answer questions to examine the content and design features.

Assignment 3: Pick an Environmental Topic

- Brainstorm environmental topics related to air pollution, water pollution, overfishing, waste, invasive species, endangered species, energy, agriculture, forestry, and mining.
- Decide on the topic for the infographic.

Assignment 4: Research the Issue

- Open the *Research Outline* template in Google Docs.
- Navigate from one heading to another in *Document Outline View*.
- Apply Internet search skills to research the cause of the problem.
- Find a fact and copy it from a web page.
- Paste the fact into the template without formatting.
- Record the URL to cite the source of information.
- Complete the research by categorizing the facts under appropriate headings.

Assignment 5: Pinpoint the Location

- Open the *Research Outline*.
- Go to the Location section using *Document Outline View*.
- Apply skills to research interesting facts about at least two locations.
- Organize location data and interesting facts using a table in the *Research Outline*.
- Record the URL to cite the source of information.

Research Checklist

- Complete the research checklist.

Learning Objectives

Content Knowledge

- define the terms stewardship, sustainable, and stakeholder
- browse news articles about environmental topics
- explore the connection between human activity and the natural environment
- identify the characteristics and purposes of an infographic

Research Skills

- brainstorm topics for an infographic using a mind map
- narrow broad topics to specific issues
- investigate an environmental issue
- categorize information using a research organizer
- summarize, condense, and rephrase researched information
- reference sources of information

Internet Skills/Digital Citizenship

- toggle between tabs in a browser
- apply search strategies to find resources related to a specific topic
- copy a selection from a web page
- curate a collection of websites
- refine search strategies using a variety of techniques (optional)
- cite the author, date, title, and website address of sources (optional)
- scrutinize information on the Internet to determine bias (optional)
- assess the reliability of online information (optional)

Word Processing Skills

- organize information in a document using heading styles
- navigate through a document in *Document Outline View*
- paste a copied selection with no formatting

Applied Technology

- research facts about an environmental issue including cause, effects, interesting facts, stakeholders, location, and solutions

This is a preview of the teacher guide.
Pages have been omitted.

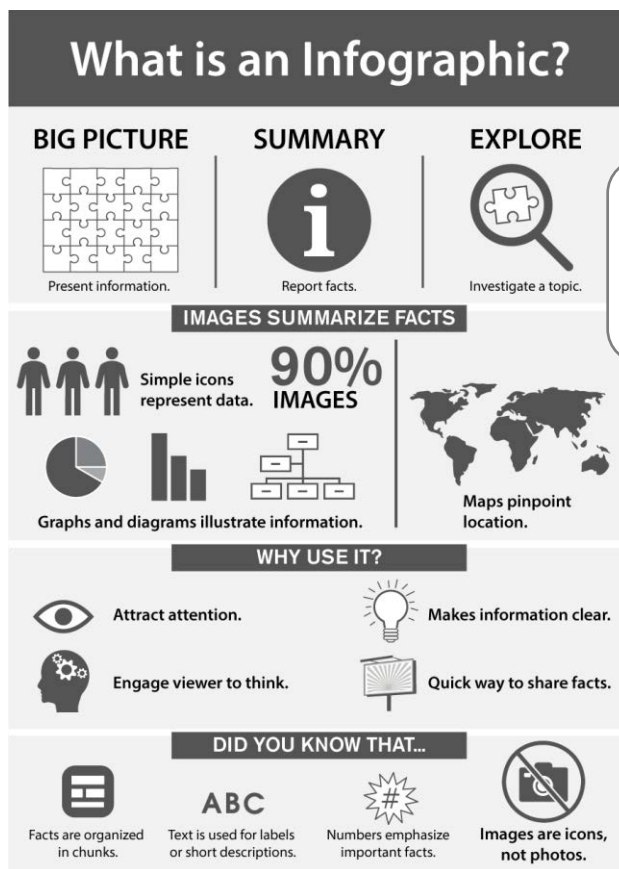
SAMPLE

Assignment 2: What Is an Infographic?

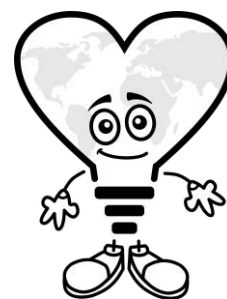
You are going to make an infographic that raises awareness about an environmental issue. Read to learn about this type of publication. Afterwards, view a sample to get ideas.

What Is an Infographic?

An infographic is a big picture that summarizes a topic. It is a one-page publication that presents information in a graphic way. Simple icons, symbols, maps, and charts combine to explain the data. Text is only used as labels or to briefly describe facts. The viewer explores the content by studying each section of cartoon-like images.



Your infographic will be *interactive*. The viewer will experience the information rather than just read it.



Why Use an Infographic?

An infographic is a simple but powerful way to communicate. There are many reasons to use it:

- catches the interest of the viewer
- outlines many facts in a compact space
- conveys data quickly using images
- informs without lots of written information
- engages the viewer to think about the topic because they must explore each part
- makes a complex issue easy to understand

Characteristics of an Infographic

▶ Visit <https://sites.google.com/view/aboutacidrain/home>

If the above link does not work, open the [Infographic Samples](#) document in Student Resources.

CONTENT

1. How does human activity cause the problem?



2. What is a harmful effect or risk related to the issue?



3. Watch the rotating slide deck. List an interesting fact.



4. Click a map marker. List one place where the problem occurs.



5. Find a solution to the problem. What is it?



DESIGN

6. Text is used for headings and to report brief facts. Which heading catches your attention?

ABC

7. Simple images explain the data. What kind of images were used?



8. Numbers emphasize important facts. What number catches your attention?



9. Color should suit the topic. Why did the creator use the color theme?



10. Information is chunked into parts. How is the topic divided into sections?



This is a preview of the teacher guide.
Pages have been omitted.








SAMPLE

Research Checklist

As an environmental steward your job is to inform people about an important issue.

Use the checklist to make sure you have the facts to create your infographic.

If you are missing something, complete your research.

<i>My research...</i>		✓
	Cause	
	describes the issue and connects human activity to the problem	
	Effect	
	lists two harmful effects or risks	
	Interesting Facts	
	outlines three facts that people will want to know	
	Stakeholders	
	identifies three businesses, organizations, or groups of people with a "stake"	
	Location	
	pinpoints at least two places related to the issue	
	Solutions	
	highlights at least two solutions	
	Sources	
	cites the website address for each site where information was found	

This is a preview of the teacher guide.
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SAMPLE



Session 2

Warn Others of the Issue

In this session, students begin to build their infographic using Google Sites. They introduce the environmental issue, describe the cause, and illustrate harmful effects. An emphasis is placed upon conveying information concisely using catchy headings and simple clip art. Instructions direct students to chunk their data into sections using color and dividers.

Assignment 6: Start to Design an Infographic

Assignment 7: What Is the Cause?

Assignment 8: What Are the Harmful Effects or Risks?

Assignment 9: Preview the Infographic

Session 2 Review: Practice Paraphrasing Strategies

Session 2 Skill Review: Communicate with Images

Session 2 Extension Activity: Photo Gallery of Harmful Effects

This is a preview of the teacher guide.
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SAMPLE

Assignment 8: What Are the Harmful Effects or Risks?

In this assignment, you explain the harmful effects of the environmental issue. A simple clip art will be used to represent each risk. The viewer should be able to understand the problem by looking at the image and reading the heading.



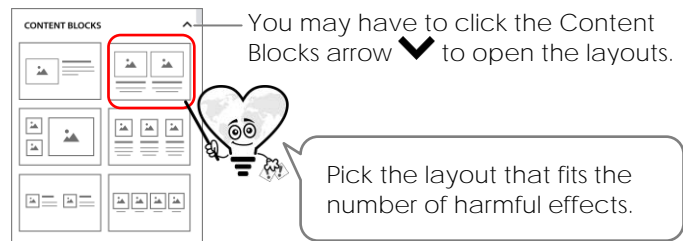
Example of *Effects* section.
Simple images represent each harmful effect.

Images should be:

- clip art, not a photo
- symbolic of the problem
- simple
- easy to see when small
- rectangle shape

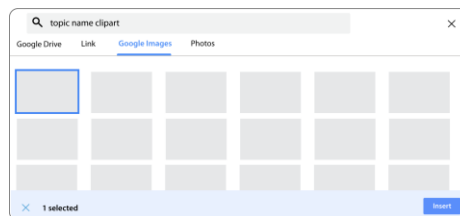
Use a Layout to Illustrate Harmful Effects

1. Open the *infographic* in Google Sites.
2. Click *Insert*. Under *Content Blocks*, pick a layout. It should include blocks of text.



Represent a Harmful Effect with an Image

3. ▶ Click the image box. Pick *Select image*.
- ▶ Click *Google Images*.
- ▶ Type *effect clipart* into the search box. Press ENTER.



If you cannot find a symbol, try these ideas:






- hazard
- danger
- stop
- exclamation
- cancel
- sad face
- delete
- end
- caution
- warning
- poison



▶ Pick an image you like. Click *Insert*.

▶ If you do not like the picture, click *Undo last action* . Pick another one.

Crop the Image (Optional)

4. ▷ Resize the image in the frame.
 - ▷ If the picture is too big, click *Crop*. 
 - Drag the slider. 
 - Reposition the image inside the frame. 
 - Click the check mark. 
- ▷ If the picture cannot be cropped to your liking, try removing the cropping:
 - Click *Uncrop*. 



Explain the Harmful Effect

5. ▷ Click inside the corresponding text box. Type the *Harmful Effect Name*.
- ▷ Click inside the second text box. Type a *brief description* of the damage or risk.



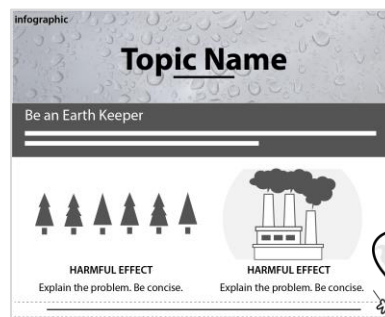
HARMFUL EFFECT


Explain the problem. Be concise.

Add the Remaining Harmful Effects Then Insert a Divider to Separate the Section


6. Apply your skills to complete the harmful effects.
7. Click *Insert*. Pick *Divider*.

A line will show at the bottom of the last section:



You can move  the divider above the section.

DESIGN TIPS

- Add a divider line both above and below the section.
- If your images are not transparent, you should keep the background white.
- To swap an image, click it two times slowly. Click . Pick *Replace image*, then *Select*.
- Adjust the size of the picture by clicking the picture and dragging the sizing handles.




Sign Out

This is a preview of the teacher guide.
Pages have been omitted.


SAMPLE

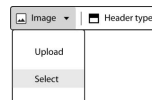
Session 2 Skill Review: Communicate with Images


An infographic uses images such as clip art, icons, or symbols to tell the viewer about a topic. Follow the instructions to design a publication about the harmful effects of clear cutting.

1. Create a new Google Sites document. 
2. Type **images** into document name box. 
3. Type **Clear Cutting** in the *Your page title* box. 
4. Click *Themes*. Select *Aristotle*. Pick a brown or green color to suit the topic.



5. An infographic uses simple clip art, not photos. Find a plain image for the banner:
 - a. Hover over the banner. Click *Image*.  From the list pick *Select*.





- b. Select *Google Images*. Type **forest clipart** in the search box. Click *Search*. 
 - c. Pick a forest image you like. For example:



6. Add information about the cause:
 - a. From the Insert pane, select the first content block layout.



- b. In the first text box type the title **No Tree Left Standing!**
 - c. In the second text box type in the description:
Clear cutting removes all the trees from an area to save logging companies money.
7. When looking for images think of words that have a similar meaning. Illustrate the cause of *clear cutting*, which is *logging*:
 - a. Click the image box.  Pick *Select image*.  Click *Google Images*.
 - b. Search for clip art. Try **clear cutting** and **logging** as keywords. Which is better?
 - c. Pick an image that shows the cause of the problem. For example:



8. You will illustrate three harmful effects. From the Insert pane, select the fourth layout.



9. An image can be an object that relates to the fact.
Find an animal to illustrate the harmful effect *loss of habitat*:

- In the first text box type in the title **Loss of Habitat**.
- In the second text box type:
Clear cutting destroys the homes of many woodland animals.
- To illustrate the problem, find a clip art of a *moose, elk, or deer*.



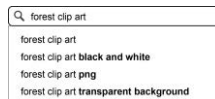
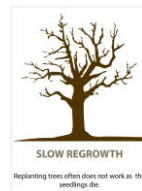
10. An image can be a symbol or sign.
Find a sign to illustrate the harmful effect *landslides*:

- In the first text box type in the title **Landslides**.
- In the second text box type:
Clear cutting can cause landslides which removes topsoil.
- To show this risk, use the search term **landslide sign**.




11. Google will make suggestions when you enter keywords.
Use this tip to illustrate the harmful effect of *slow regrowth*.

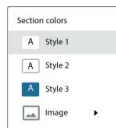
- In the first text box type in the title **Slow Regrowth**.
- In the second text box type:
Replanting trees often does not work as the seedlings die.
- Search for a clip art using the search term **forest**.
- View the other suggestions. This is called predictive text.




- Use a suggested keyword to find a suitable clip art.

12. Apply a color to the section background.

- Hover at the left side of the text box. Click **Section colors**. 
- Pick an option from the list:



DESIGN TIPS

- To make the descriptions easier to read, select the text. Click the *Styles* arrow. Pick *Heading*.
- If your images are not transparent, you should keep the background white.
- To swap an image, click it two times slowly. Click . Pick *Replace image*, then *Select*

13. Sign out.

This is a preview of the teacher guide.
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SAMPLE



Session 3

Highlight the Facts

In this session, students create a rotating slide deck using Google Slides. It will emphasize interesting facts and outline stakeholders. To start, students use a big number to highlight the scale of the problem. Next, they point out an important detail using colorful word art. Afterwards, they construct a diagram that summarizes who has a stake. Upon completion, the slide deck is inserted into the infographic and set to automatically play. Instantly the viewer should be able to grasp the scope of the environmental issue.

Assignment 10: How Big Is the Problem?

Assignment 11: Hook the Viewer's Attention

Assignment 12: Who Are the Stakeholders?

Assignment 13: Create a Rotating Slide Deck

Session 3 Review: Slides Formatting Tools Quiz

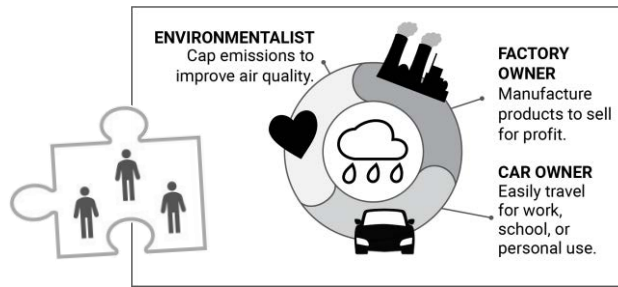
Session 3 Extension Activity: Inform with a Pictograph

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SAMPLE

Assignment 12: Who Are the Stakeholders?

In this assignment, you add a diagram to the rotating slide deck. It will identify the stakeholders who have an interest in the issue. An organizer with text boxes will divide the information.



Example of Stakeholder slide.
To get ideas watch the *stakeholder* presentation.

The diagram should:

- identify the stakeholder
- explain each "stake" in only a few words
- match the infographic's color scheme
- be easy to understand quickly

Who are three stakeholders?

Insert a New Slide and Apply the Blank Layout

1. ▶ Open the *FACTS slide deck* in Google Slides.

▶ Select the last slide in the pane. Press the ENTER key to insert a new slide.

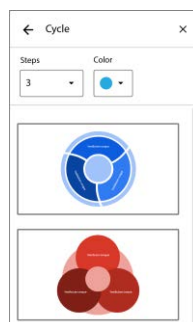


▶ Click *Layout*. Select *Blank*.

Choose a Diagram

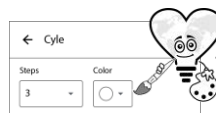
2. ▶ From the *Insert* menu, select *Diagram*.

▶ Choose *Process*, *Relationship*, or *Cycle*. Look at the options.



- Pick a design that has two text boxes for stakeholder name and interest.
- Unwanted text boxes or extra shapes can be deleted.
- Click ← *Back* to view a different category.

▶ Change the *Steps* to the number of stakeholders. Pick a *Color*.



Try different colors and diagram options until you find the perfect one!

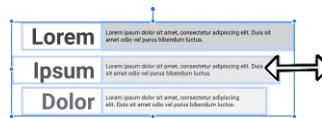
▶ Click on the diagram to place it on the slide. If you do not like it, click *Undo*.

Resize the Diagram to Fill the Slide

3. ▷ Click and drag around the diagram on the slide to select it.



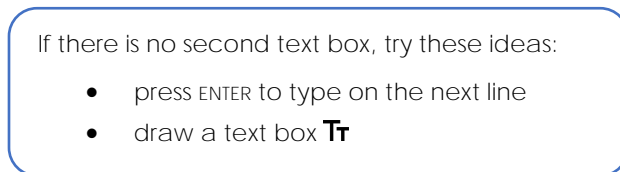
▷ Drag the sizing handles to resize the diagram.



Add Information to the Diagram

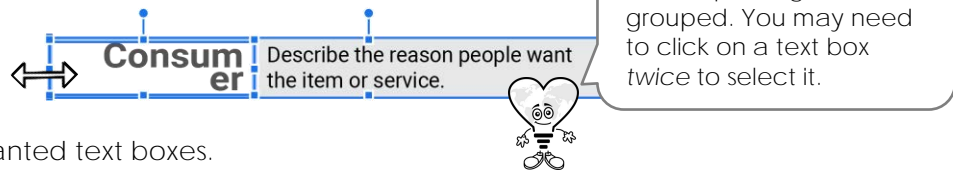
4. ▷ In each main text box type the *Name of the Stakeholder*.

▷ In the joining text box describe the *stakeholder's interest*. How are they involved?



▷ Format the font size. - [29] + IT CANNOT BE LESS THAN 24 points.

▷ If the text does not fit, resize the text box. For example:

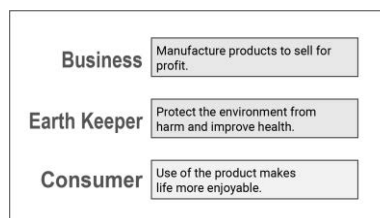
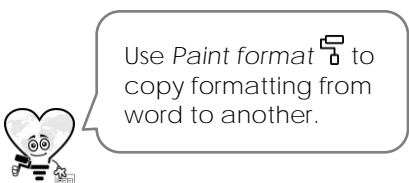


▷ Delete any unwanted text boxes.

Improve the Design of the Diagram

5. ▷ Use your skills to make the diagram look great:

- o Fill the shape with color. 🎨 It should suit the topic and match the infographic.
- o Apply a different font [Arial] or size - [29] + to the *stakeholder name*.
- o Format text color. **A** You may have to click *More* ⋮ to find other tools on the toolbar.



Insert Icons to Represent Each Stakeholder (Optional)



6. ▷ Click *Insert image*. 

▷ Click *Search the web*. 

▷ In the search pane, type *stakeholder* or an object that shows what they gain.

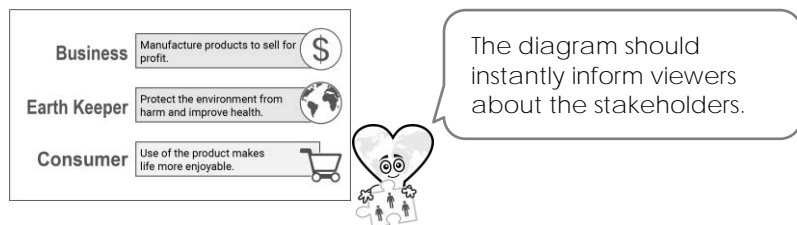


▷ Pick one you like. Click *Insert*.






▷ Use your skills to resize  and place  the image.

Complete the Diagram

7. Apply your skills to make the slide look great!



DESIGN IDEAS

- Change the slide background color.
- Resize  and move  the text boxes to fit the information.
- To swap an image, select *Replace image*. From the menu, click *Search the web*. 
- To recolor an image, select *Format options*. Pick *Recolor*. Select an option from the gallery.
- To create more space, move a stakeholder group. Now select all stakeholder groups. From the *Arrange* menu select *Distribute*. Pick *Vertically*  or *Horizontally*. 

SELECTION TIPS

- Press the **TAB** key on the keyboard.
- If you cannot grab an object, from the *Arrange* menu, select *Ungroup*.

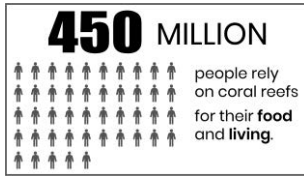
Sign Out


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Session 3 Extension Activity: Inform with a Pictograph

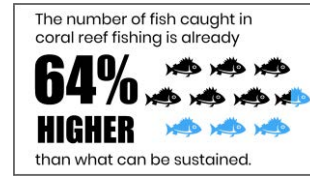
An infographic often uses a *pictograph* to communicate information. A pictograph is a graph that is made from pictures. Each image represents a value. It could be a fraction, ratio, percent, price, or other unit of measure. Create a slide that includes a pictograph.




key:  = 10 million people
depict the amount of things
copy and paste to show a group




key:  = one fifth
represent a fraction or ratio
recolor an image to show a value








key:  = 10%
illustrate a percentage
crop an image to show a portion

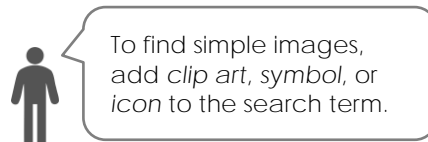
Fact: _____




Key: _____ = _____
symbol unit of measure

- Open the *slide deck* in Google Slides.
- Select the last slide thumbnail.
- Click the *New slide* arrow.  Select *Main point* or *Big number*.



- Use your skills to describe the fact. Format the font , size - + , and style. **B**
- Insert an image to represent the value.
 - Click *Insert image*. 
 - Click *Search the web*.  Type a search word.
 - Click on an icon you like. Click *Insert*.
 - Resize  and move  the icon .
- Duplicate images to create a group:
 - Select the icon.
 - Press CTRL+D or choose *Duplicate*  from the Edit menu.
 - Repeat to add multiple images that represent the number.



To quickly make a group, select several icons. From the Arrange menu, select *Group*. 
Copy  and paste  the grouped icons.

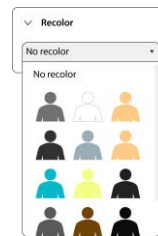
6. Align and distribute a row of images:
 - a. Place the first and last image where you want them on the slide.
 - b. Click and drag around the images to select them all.



- c. From the Arrange menu, click *Align*. Select *Top* , *Middle* , or *Bottom* .
 - d. From the Arrange menu, click *Distribute*. Select *Horizontally*.

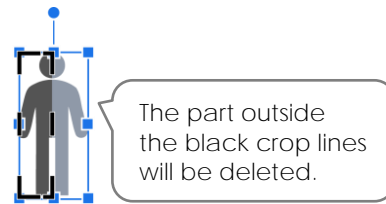


7. (Optional) Recolor an image:
 - a. Select the image(s) to be a different color.
 - b. Click *Format options*.
 - c. Click the *Recolor* arrow. Pick a color.



Recolor images to show a fraction, ratio, or percent.
For example: 60%

8. (Optional) Crop an image:
 - a. Select the image to be cropped.
 - b. Click *Crop image*.
 - c. Drag a handle to remove part of the shape.
 - d. Click *Crop image* again.



Crop an image to show a portion or part of a value.
For example: 65 thousand people

TIP: How to make an image two colors:

1. Copy and paste to make an extra image.
2. Crop the pasted shape.
3. Recolor the cropped shape.
4. Drag the cropped shape over top of another image.

Use the *Zoom* tool to magnify an image. Click on the image with the tool to enlarge it. To go back to the slide, right click the image. Or click the *Zoom* arrow and pick *Fit*.



Copy and then crop an image to show part of a percentage.
For example: 65%

9. Sign out.

This is a preview of the teacher guide.
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SAMPLE



Session 5

Tackle the Challenge

In this session, students illustrate solutions to environmental issues by designing their own icons using Google Drawings. Each image will be a simple representation made by combining shapes, word art, and cropped images. The original artwork will be inserted into the infographic with an explanation. A link to an advocacy group will invite viewers to get involved.

Assignment 16: Which Organization Can Help?

Assignment 17: What Are Solutions?

Assignment 18: Make a Difference

Session 5 Review: Match an Icon to Its Meaning

Session 5 Extension Activity: Make a Collapsible Source List

This is a preview of the teacher guide.
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SAMPLE

Assignment 15: What Are Solutions?

In this assignment, you design an icon that illustrates a solution to the environmental issue using Google Drawings. You will apply your drawing skills to combine shapes, word art, and clip art.

What Is an Icon?

An icon is a simple drawing made from lines and shapes. It is used to express an idea more quickly than words.

Symbols or images used in icons should be universal. Most people must understand their meaning in the same way.

What Are Environmental Solutions?

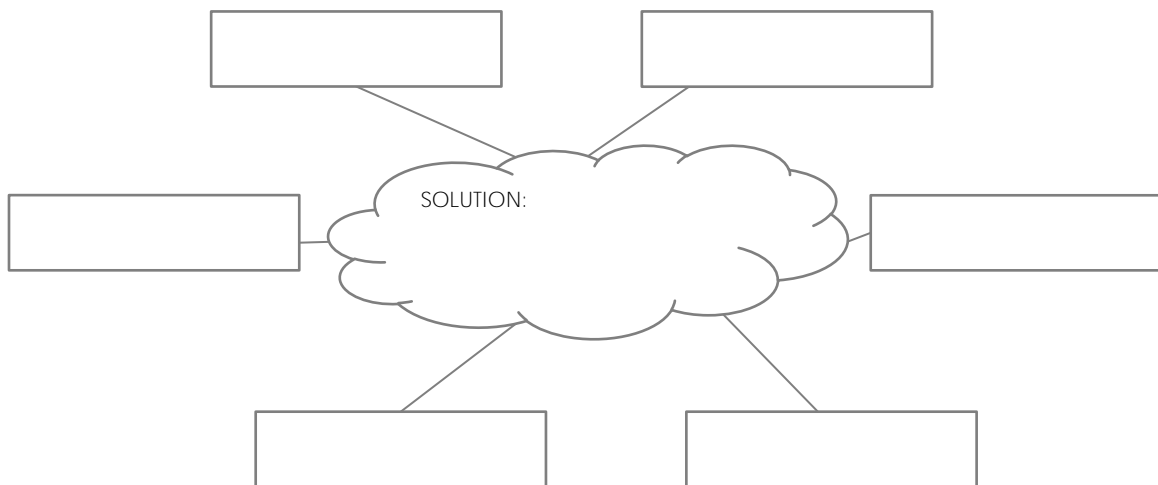
There are many types of solutions to environmental problems. They can be:






Brainstorm Ideas for the Icon Design

Refer to your Research Outline to select a solution to illustrate.


Brainstorm a list of objects related to the solution. Write each object's name in a box. When done, pick the object(s) you think most people will understand and use them in your icon design.

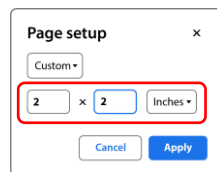


Create a Google Drawings and Change the Share Settings







1. ▷ Sign into your Google account. Click *New*. 
 - ▷ Click *More*. Select *Google Drawings*. 
 - ▷ Replace *Untitled drawing* with *solution*.
 - ▷ Apply your skills to share.  Give *Anyone with the link* the role of *Viewer*.

Set the Icon Size



2. ▷ From the File menu select *Page setup*. 
- ▷ Pick *Custom*.
- ▷ Type *2 x 2*. Select *Inches*. Click *Apply*.



Apply Your Skills to Design an Icon for a Solution

3. Select a shape for the background:
 - o Click *Shape*.  Pick a category.
 - o Draw a shape that fills the canvas.
 - o Use your skills to format the fill and border of the shape.   
4. To design the icon combine shapes , Word art **A**, and/or an image. 

DESIGN TIPS

- *Swap it:* Right click on a shape. Pick *Change shape*.
- *Outline it:* Click *Format options*, Check *Drop shadow*. Pick *white*. Drag the *Opacity* and *Blur Radius* sliders to the left.
- *Combine it:* Select objects. From the *Arrange* menu, click *Group*.
- *Crop it:* Click the *Mask image* arrow.  Select a shape. Click *Crop*. 
- *Shadow it:* Click *Format options* and choose *Drop shadow*.



5. Complete the checklist. Will viewers understand your icon?

	✓
The icon design is simple.	
The icon uses symbols that are easy to recognize.	
The meaning of the icon is clear in only a few seconds.	
The icon will match the infographic.	

Sign Out

This is a preview of the teacher guide.
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SAMPLE



Session 6

Let's Get Involved!

In this session, students raise awareness about an environmental issue. They publish their infographic using Google Sites. Afterwards, they share their infographic at an Earth Keeper's Conference.

Assignment 19: Publish the Infographic

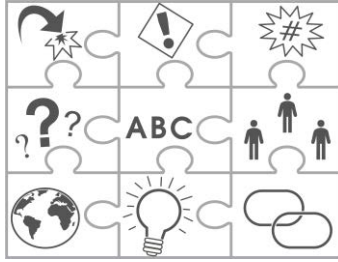
Assignment 20: Host an Environmental Conference

Session 6 Review: Infographic Reflection

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SAMPLE

Session 6 Review: Infographic Reflection



You are an environmental steward! In this course, you designed an infographic that summarized facts about an important topic. Answer questions about your infographic.

1. What was the most interesting discovery you had while researching the topic?

2. What part of the infographic are you most proud of making? Why?

3. If you had more time, what would you like to add to your infographic?

4. What was the most difficult part of this course? How did you overcome the challenge?

5. Which do you prefer, writing a report or designing an infographic? Why?



Appendices

Refer to the appendices for additional resources:

Appendix A: Assessment Tools









Appendix B: Glossary

Appendix C: Contact Information

This is a preview of the teacher guide.
Pages have been omitted.

SAMPLE

Infographic Rubric

	Needs Improvement Level 1	Good Level 2	Great Level 3	Excellent Level 4
<p>Cause</p> 	The cause is incomplete or missing.	The cause is described but lacks a connection to human activity.	The cause of the problem is described and forms a connection to human activity.	The cause of the problem is described concisely and forms a connection to human activity that is easily understood.
<p>Effect</p> 	<p>Effect section is incomplete or missing.</p> <p>Images are not suitable or missing.</p>	<p>Two effects are described.</p> <p>Images illustrate the effects.</p>	<p>Two effects are described and show an understanding of the content.</p> <p>Images are icons that represent the data effectively.</p>	<p>Two effects are described concisely and show an understanding of the content.</p> <p>Images are icons that represent the data effectively and are well-formatted.</p>
<p>Facts</p> 	Slide deck is incomplete or missing.	Slide deck includes two facts.	Slide deck includes two interesting facts that are compelling.	Slide deck includes two interesting facts that are compelling and eye-catching.
<p>Stakeholder</p> 	Stakeholder graphic organizer is incomplete or missing.	<p>Involvement of 3 stakeholders is partially explained using a graphic organizer.</p> <p>Parts of the graphic are not easy to understand.</p>	<p>Involvement of 3 stakeholders is explained using a graphic organizer.</p> <p>Graphic is easy to understand.</p>	<p>Involvement of 3 stakeholders is briefly but thoroughly explained using a graphic organizer.</p> <p>Graphic is easy to understand and conveys a message quickly.</p>
<p>Thematic Map</p> 	Map is incomplete or missing.	<p>Map pinpoints places related to the issue, with a description, and photo.</p> <p>Some marker icons related to the topic.</p>	<p>Map accurately pinpoints places related to the issue, with a brief description, and photo.</p> <p>Marker icons are customized to relate to the topic.</p>	<p>Thematic map accurately pinpoints places related to the issue, with a brief well-phrased description, and relevant photo.</p> <p>Marker icons relate to the topic and express information visually.</p>
<p>Solutions</p> 	Solution section is incomplete or missing.	<p>Two solutions are identified with a link to an organization.</p> <p>Icons represent each solution.</p>	<p>Two solutions are explained with a link to a reputable organization.</p> <p>Icons are original and represent each solution.</p>	<p>Two solutions are clearly and concisely explained with a link to a reputable organization.</p> <p>Icons are original, high-quality, and represent the solution.</p>
<p>Organization</p> 	<p>Sections are not logically sequenced.</p> <p>Headings are unclear or missing.</p>	<p>Sections are logically sequenced.</p> <p>Some headings identify information clearly.</p>	<p>Sections are logically sequenced, and design elements divide information.</p> <p>Headings identify information clearly.</p>	<p>Sections are logically sequenced, and design elements divide information creatively.</p> <p>Catchy headings identify information and grab attention.</p>
<p>Purpose</p> 	Infographic does not raise awareness about an environmental issue.	Infographic raises awareness about an environmental issue.	Infographic is informative and raises awareness about an environmental issue.	Infographic is informative, raises awareness about an environmental issue, and inspires action.



RESOURCE

This course includes a sample of a completed project. Teachers can use this resource for demonstration purposes or as a source of inspiration.

infographic

Acid Rain

We Have a Problem!

Our air is being poisoned. The main cause is industries that burn coal or other fossil fuels. The gas from smoke stacks combines with water in the air to form acid rain. Acid rain has lots of nitric and sulfuric acid. It is deadly!

Normal rai...
4.2
PH of acid rain



DAMAGED FORESTS



Acid rain that seeps into the ground removes nutrients from the soil. This makes it easier for insects or cold weather to damage trees.

TOXIC WATER



Acid rain changes the pH level of the water. This can cause aquatic wildlife such as insects or plankton to die.

FOG in polluted areas may be MORE ACIDIC than rain.
ACID FOG!



Acid Rain Map



Click the markers to explore the map.

EPA



ENVIRONMENTAL PROTECTION AGENCY

The EPA has the power to limit emissions of air pollutants coming from sources like chemical plants, utilities, and steel mills.

SOLAR ENERGY



A renewable energy source is solar power. It does not emit harmful toxins into the air which cause acid rain.

Sources