

Instructional Recipe

Why Should We Care About Global Warming?

Grade 8
 Science/ Language Arts

Step 1 – Ask

Objectives: Students will understand the concept of global warming and its causes. Then they will explain its effects on the environment and weather. They will predict the future impact on the U.S. climate, economy and society.

Introduction: Humans today use 100 times more energy than they did 200 years ago, and the amount is constantly on the rise. Developing countries in Europe, North America and Japan use 70% of the world's energy and house just ¼ of the world's population. What are the consequences of this massive use of energy? How have these changes affected our lives? What might happen if global warming continues to worsen? What can we do about it?



"Brisbane Enters Stage 5 Water Restrictions" Online Photograph. EBSCO image Collection. 13 Oct. 2008 < <http://search.ebscohost.com/login.aspx?direct=true&db=imh&AN=imh347462&site=srck5-live>>

Ask:

- ★ What is global warming?
- ★ What causes global warming?
- ★ What are the effects on the environment?
- ★ How does it affect the seasons?
- ★ What is ozone?

Vocabulary:

Global warming	Emission
Greenhouse effect	Fossil fuel

Science TEKS:

(11) **Science concepts.** (A) identify that change in environmental conditions can affect the survival of individuals and of species;
 (14) **Science concepts.** (B) analyze how natural or human events may have contributed to the extinction of some species; and (C) describe how human activities have modified soil, water, and air quality.

Language Arts TEKS:

(22) **Research/Research Plan.** (B) apply steps for obtaining and evaluating information from a wide variety of sources and create a written plan after preliminary research in reference works and additional text searches.

(23) **Research/Gathering Sources.**

(A) follow the research plan to gather information from a range of relevant print and electronic sources using advanced search strategies; (B) categorize information thematically in order to see the larger constructs inherent in the information; (C) record bibliographic information (e.g., author, title, page number) for all notes and sources according to a standard format; and (D) differentiate between paraphrasing and plagiarism and identify the importance of using valid and reliable sources.

(24) **Research/Synthesizing Information.**

(A) narrow or broaden the major research question, if necessary, based on further research and investigation; and (B) utilize elements that demonstrate the reliability and validity of the sources used (e.g., publication date, coverage, language, point of view) and explain why one source is more useful and relevant than another.

(25) **Research/Organizing and Presenting Ideas.**

(A) draws conclusions and summarizes or paraphrases the findings in a systematic way; (B) marshals evidence to explain the topic and gives relevant reasons for conclusions; (C) presents the findings in a meaningful format; and (D) follows accepted formats for integrating quotations and citations into the written text to maintain a flow of ideas.

Step 2 – Investigate

K-12 Databases Resources: Search for “global warming” AND effects; or “global warming” AND causes.

- ★ "global warming." Compton's by Britannica. 2007. Encyclopædia Britannica Online School Edition. 14 Dec. 2007 <<http://school.eb.com/comptons/article-9311438>>
- ★ [WE NEED TO COOL IT](#). By: Underwood, Anne. Newsweek, 7/11/2005, Vol. 146 Issue 2, p48-50, 2p, 3c
- ★ [Warming Fuels Trouble In The West](#). National Wildlife, Dec2006/Jan2007, Vol. 45 Issue 1, p52-52, 1p, 1c

Additional Websites:

[Global Warming: The Threat](#) – A ThinkQuest student-created project - <http://library.thinkquest.org/04apr/00420/home.htm>

Books:

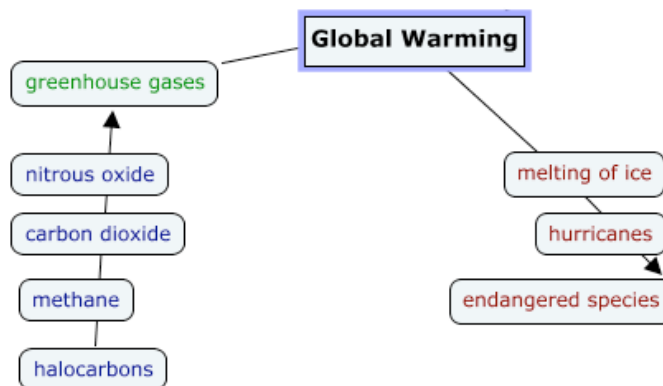
The Discovery of Global Warming by Spencer R. Weart

Technology Applications TEKS:

- (4) **Information acquisition**
(B) apply appropriate electronic search strategies in the acquisition of information including keyword and Boolean search strategies
- (6) **Information acquisition**
(B) resolve information conflicts and validate information through accessing, researching, and comparing data
- (7) **Solving problems**
(A) plan, create, and edit documents created with a word processor using readable fonts, alignment, page setup, tabs, and ruler settings. (G) integrate two or more productivity tools into a document including, but not limited to, tables, charts and graphs, graphics from paint or draw programs, and mail merge
- (11) **Communication**
(A) publish in a variety of ways including, but not limited to, printed copy, monitor display, Internet documents, and video

Step 3 – Create

Students will identify the causes and effects of global warming and organize the information in a chart or idea web.



Technology Link

Students may use graphic organizer software such as Inspiration, or use a free Web 2.0 tool such as <http://bubbl.us>, <http://mywebspiration.com>, or Intel's [Seeing Reason](#) tool to map their ideas.

Step 4 – Discuss

Students will choose one or more of the following projects:


1. A science magazine has just hired you to write a report on the impact of global warming in the U.S. Write an article for the magazine and add illustrations.
2. As a scientist working for NOAA, you have been assigned the task to compare climate changes in the U.S. and two other countries in the world (or in your community and two other communities) over the last 20 years. Record and present your observations, and make your recommendations.
3. Create a commercial or Public Service Announcement to make others aware of the importance of global warming and its consequences.

Technology Links

1. Create a wiki to publish an online article for the science magazine. Use photographs from the K-12 Databases to illustrate your article.
2. Use Excel or Numbers to create a spreadsheet for your data. Use PowerPoint or Keynote to present your findings and recommendations.
3. Use iMovie, Windows Movie Maker or any other video editing software to create the commercial or PSA.

Step 5 – Reflect

Allow students to present their projects to the rest of the class. Use the following suggested rubric to assess the students' work. Make sure that the students are familiar with the rubric **before** they begin creating their project. They should refer to the rubric repeatedly to monitor their progress in creating their project.

 Technology Link: You can also create your own rubric with your students at <http://rubistar.4teachers.org/index.php>.

RUBRIC Magazine Article

CATEGORY	4	3	2	1
Organization	Notes and ideas are recorded and organized in a neat and orderly fashion.	Notes and ideas are recorded legibly and are somewhat organized.	Notes and ideas are somewhat disorganized.	Notes and ideas are organized only with assistance and reminders.
Quality of Information	Information clearly relates to the main topic. It includes several supporting details and/or examples.	Information clearly relates to the main topic. It provides 1-2 supporting details and/or examples.	Information clearly relates to the main topic. No details and/or examples are given.	Information has little or nothing to do with the main topic.
Language	No grammatical, spelling or punctuation errors.	Almost no grammatical, spelling or punctuation errors	A few grammatical spelling and/or punctuation errors.	Many grammatical, spelling and/or punctuation errors.
Sources	All sources (information and graphics) are accurately cited.	All sources (information and graphics) are accurately cited, but a few are not in the desired format.	All sources (information and graphics) are accurately cited, but many are not in the desired format.	Some sources are not accurately cited.
Attractiveness	Diagrams and illustrations are neat, accurate and add to the reader's understanding of the topic. Article is enhanced by appropriate use of fonts, colors, images, and format.	Diagrams and illustrations are accurate and add to the reader's understanding of the topic. Article is somewhat enhanced by appropriate use of fonts, colors, images, and format.	Diagrams and illustrations are neat and accurate and sometimes add to the reader's understanding of the topic. Article has very little use of fonts, colors, images, and format.	Diagrams and illustrations are not accurate OR do not add to the reader's understanding of the topic. Article lacks appropriate use of fonts, colors, images, and format.

RUBRIC Multimedia or Video Project

CATEGORY	4	3	2	1
Accuracy of information	Student accurately describes the problem, its causes and consequences.	Student accurately describes most causes and consequences of global warming.	Student accurately describes some causes and consequences of global warming	Student describes only a few causes and consequences of global warming.
Persuasiveness	Student provides numerous convincing reasons and steps to reduce global warming.	Student provides several convincing reasons and steps to reduce global warming.	Student provides only few convincing reasons or steps to reduce global warming.	Student does not provide any convincing reasons to reduce global warming.
Creativity	The student includes many creative elements in the presentation.	The student includes some creative elements in the presentation.	The student includes very little creative elements in the presentation,	The presentation lacks any creative elements.
Delivery of Presentation	Student delivers the presentation with enthusiasm and fluency. Student has obviously practiced for the presentation.	Student delivers the presentation with enthusiasm and fluency. Student has obviously rehearsed for the presentation, although he or she may make a few minor mistakes.	Student struggles with the delivery of the presentation, but the information is still easily understood by the audience.	Student struggles with the delivery of the presentation, making it difficult for the audience to hear or understand the information.