

the heat is on
the heat is on
the heat is on
the heat is on
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OR

IT'S GETTIN HOT IN HERE,
SO CUT DOWN ON YOUR GAS

**An integrated, interdisciplinary thematic unit exploring
the human impact on global warming.**

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Jersey City Public Schools

OVERVIEW

I. CONTENT

Our planet's climate has never been entirely stable or unchanging. The climatic changes taking place today are unfolding at an exceedingly rapid rate. Most scientists agree that human activities such as fossil fuel combustion and deforestation are largely responsible for the current modification of Earth's atmosphere and climate. Climatic changes will likely have adverse consequences for ecosystems and for millions of people around the world. For this reason, increasing numbers of scientists, policymakers, and ordinary citizens are seeking to take action to minimize and alleviate our impacts on the climatic system. Students will gain an understanding that all actions have a reaction that affects the world in which they live. Students will also understand the concept of interlocking cycles in which each cycle on earth is dependent on others.

The essential concept is that the environment is an interdependent system which can drastically be affected by society. The unit will review and illustrate the causes and consequences of global warming. The students will gain the knowledge necessary to become politically and environmentally conscious of their actions as they affect the environment. They need to understand and comprehend the effects of global warming on their future daily lives.

II. PROCESS:

Thinking skills are developed through varied creative individual and group activities, creative and formal writing pieces, experimentation, visual arts, math/statistical analysis, and using geography and science skills. Journal entries will require inference and prediction.

The unit will begin by defining climate changes and identifying weather patterns. Students will be able to describe the Earth's climate system and explain the variety of factors influencing global climate. Students will be able to discuss the factors that exert influence on the Earth's climate. Students will be able to debate current consequences and potential future impacts of global change. Students will be able to evaluate the scientific, political, and economic discussions concerning climate change.

III. PRODUCT:

Students will learn ways to become more responsible citizens and better stewards of the Earth. They will gain a sense of empowerment through the creation of posters, illustrations, written pieces, debates, art, and garden projects. Lessons are planned for various departments within the school, including the math, science, social studies, language arts, history, fine arts, and music departments. The culminating product will be school-wide participation in an annual Earth Day event, such as planting a garden at the school.

Unit Overview: Alignment with New Jersey Core Curriculum Content Standards

New Jersey Standard 5.10: All students will develop an understanding of the environment as a system of interdependent components affected by human activity and natural phenomena.

Standard A.1: Distinguish naturally occurring processes from those believed to have been modified by human interaction or activity such as climate change and ozone production.

Standard B.2: Use scientific, economic and other data to assess environmental risks and benefits associated with societal activity.

New Jersey Standard 5.1: All students will develop problem-solving, decision-making and inquiry skills, reflected by formulating usable questions and hypotheses, planning experiments, conducting systematic observations, interpreting and analyzing data, drawing conclusions, and communicating results.

Standard A.1: When making decisions, evaluate conclusions, weigh evidence, and recognize that arguments may not have equal merit.

Standard A.4: Explore cases that demonstrate the interdisciplinary nature of the scientific enterprise.

New Jersey Standard 6.6: All students will apply knowledge of spatial relationships and other geographic skills to understand human behavior in relationship to the physical and cultural environment.

Standard E.3: Analyze examples of changes in the physical environment that have altered the capacity of the environment to support human activity, including pollution, salinization, deforestation, species extinction, population growth, and natural disasters.

Standard E.6: Analyze the human need for respect for and informed management of all resources (sustainability), including human populations, energy, air, land, and water to insure that the earth will support future generations.

**I-SEARCH INDEPENDENT RESEARCH PROJECTS
FOR GIFTED AND TALENTED STUDENTS: PROJECT BASED LEARNING FOR MULTIPLE
INTELLIGENCES**

1. **PARADOXES:**

In order to save trees, we are using computers that require electricity and rare metals. Draw a political cartoon depicting this paradox.

2. **ATTRIBUTES:**

Al Gore is a gifted motivational hero. Imagine he has permanently lost his voice. You have been chosen to be the replacement spokesman for the sequel to "An Inconvenient Truth." Prepare its video trailer.

3. **ANALOGIES:**

Create five riddles using environmental analogies.

4. **DISCREPANCIES:**

Create a timeline poster for the classroom showing the progress of the environmental movement. Depict the delay between when a problem is noticed, when laws are enacted, and when the problem has been solved.

5. **PROVOCATIVE QUESTIONS:**

How fast have glaciers been melting in different parts of the world? Create a map showing what the effects will be in different locations if the effects continue at the same or at an accelerated rate.

6. **EXAMPLES OF CHANGE:**

Hold a press conference announcing the laws that will be changed to further protect the environment.

7. **EXAMPLES OF HABIT:**

Create a product from the column on the right showing good and bad habits regarding conservation, reusing, and recycling.

8. **ORGANIZED RANDOM SEARCH:**

Based upon the structure of a greenhouse, develop an ozone shield by making either a detailed illustration or Paper Mache.

9. **SKILLS OF SEARCH:**

Research the *Exxon Valdez* oil spill and its current environmental status. Create a PowerPoint presentation of your research results.

10. **TOLERANCE FOR AMBIGUITY:**

Construct a classroom newspaper with articles denouncing global warming.

11. **INTUITIVE EXPRESSION:**

The Arctic Ocean is warming up and you are a polar bear swimming a long distance to reach ice. Write a poem about your thoughts while swimming.

12. **ADJUSTMENT TO DEVELOPMENT:**

Functioning as an investigative reporter, interview people in the community (city workers, politicians, appointed officials) about environmental concerns and new policies that need to be put into place to deal with global warming.

13. **STUDY CREATIVE PEOPLE AND PROCESS:**

Create an oral report describing the inspiration to become involved in the environmental movement (Al Gore, Robert Kennedy Jr., and Ralph Nader)

14. **EVALUATE SITUATIONS:**

Create a new tourist map of a section of the US coastline after the sea level has risen 20 feet.

15. **CREATIVE READING SKILL:**

Find an environmental article that has no images, and present the information in an animated movie or detailed illustration.

16. **CREATIVE LISTENING SKILL:**

Create an announcement for the sequel to "An Inconvenient Truth" after viewing the film or reading the book.

17. **CREATIVE WRITING SKILL:**

Compose a poem that uses images and symbolism depicting the effects of global warming.

18. **VISUALIZATION SKILL:**

Create a series of paintings that shows the changes (depletion) in the ozone layer from the perspective of a satellite.

ACADEMIC / CRITICAL THINKING SKILLS
ANALYZING HUMAN ACTIVITIES! (AHA!)

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NJCCCS 5.1.12.A.1, 2: Students will be able to evaluate conclusions, weigh evidence and recognize that arguments may not have equal merits when making decisions. Assess the risks and benefits associated with alternative solutions.

ESSENTIAL QUESTION: What human activities cause the rise in global temperatures?

ESSENTIAL CONCEPTS: What is global warming?

1. **PRODUCING, EXCHANGING, AND DISTRIBUTING** [ECONOMICS]

Textbook or Database: *An Inconvenient Truth / Silent Spring*

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: Question and answer regarding what items/resources the students consume or create on a daily basis? (For example, water, gasoline, food, electricity, packaging materials, solid waste, etc.)

Students will: Describe global warming and identify sources that contribute to global warming.

Formative Assessment: Each student will illustrate 3 causes of global warming

COMPREHENSION:

Students will further discuss how the American society consumes natural and manmade resources, and how this contributes to global warming. Students will predict what the future will be like with/without these resources.

Short-term / Cumulative Assessment: Students will pick 6 illustrations to form a group collage on the causes of global warming.

APPLICATION:

Anchoring Activity / Anticipatory Set: Film Clip from *An Inconvenient Truth* – Before and after map sequence

Students will create a (class / team product): Post global warming map of Jersey City (or NJ)

Formative Assessment / Rubric for Product: Summarize changes in consumer habits as a result of global warming.

Multicultural and/or ESL and/or Bilingual Link: Compare the map of Jersey City to other country maps

Mathematics/Science Link and/or Humanities Link: Calculate the percent of Jersey City that would be underwater

School-to-Career/Tech Prep Link: Meteorologist, biophysicist, engineer, scientist

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Lyrics to *Big Yellow Taxi*

Students will: Evaluate the lyrics of *Big Yellow Taxi* and apply it to a post global warming world.

Class/team/individual product: Students will develop presentations of their findings

Summative Assessment: Students will present the findings orally

INDIVIDUAL JOURNAL ASSIGNMENT:

What will Jersey City be like in the year 2080?

HOMELINK:

Make an energy assessment of their homes

NJCCCS 5.8.12.B.1: Students will be able to describe how weather (in the short term) and climate (in the long term) involve the transfer of energy in and out of the atmosphere.

ESSENTIAL QUESTION: How do local actions cause global consequences?

ESSENTIAL CONCEPTS: Atmospheric cycle, ocean currents, water cycle

2. TRANSPORTATION

Textbook or Database: *The New Dictionary of Cultural Literacy, NY Times Almanac*, science textbook

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: PBS Documentary – Polar Bears Loosing Ice

Students will: Describe the Atmospheric Cycle, ocean currents, and the water cycle

Formative Assessment: Short Quiz/ Quest on atmospheric cycle, ocean currents, and the water cycle

COMPREHENSION:

Debate the effects on the world of the altering of the Gulf Stream

Short-term / Cumulative Assessment: Essay summarizing the debate

APPLICATION:

Anchoring Activity / Anticipatory Set: Open bottle of perfume and see how long it takes for the aroma to diffuse to the other side of the room

Students will create a (class / team product): World map of wind and ocean currents

Formative Assessment / Rubric for Product: Evaluate students' world maps

Multicultural and/or ESL and/or Bilingual Link: Investigate the origin of El Nino and La Nina

Mathematics/Science Link and/or Humanities Link: How airline travel helps to spread disease

School-to-Career/Tech Prep Link: Meteorologist, marine biologist, oceanographer, forensic auditor

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Compare historical shipping routes and how they changed due to new technology (for example, the Silk Road, Atlantic Ocean shipping routes from the 1700's, canals, railroads)

Students will: Predict the nautical changes a shipping company would have to make in order to trade across the globe if global warming changes oceanic currents.

Class/team/individual product: Compare and contrast new and old global currents by using Venn diagram

Summative Assessment: Evaluate the Venn diagrams

INDIVIDUAL JOURNAL ASSIGNMENT:

Diary of a worker 60 years from now describing the effects of global warming through time.

HOMELINK:

Where does Jersey City's weather come from?

NJCCCS 3.5.12.C.3: Students will be able to recognize that creators of media and performances use a number of forms, techniques, and technologies to convey their message.

ESSENTIAL QUESTION: How do we persuade individuals to take actions that prevent global warming?

ESSENTIAL CONCEPTS: Persuasive arguments

3. COMMUNICATIONS

Textbook or Database: *50 Simple Things You Can Do to Save the Earth*.

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: Class brainstorm to create a blackboard list of things they can do to prevent global warming.

Students will: Learn the key components in making a persuasive argument

Formative Assessment: Create a persuasive product listing actions you can take to prevent global warming

COMPREHENSION:

Students will evaluate the final products to determine which was the most effective

Short-term / Cumulative Assessment: Write which product was most convincing and why

APPLICATION:

Anchoring Activity / Anticipatory Set: Put persuasive product into action at school level.

Students will create a (class / team product): Newsletter to communicate how we can prevent global warming

Formative Assessment / Rubric for Product: Evaluate the newsletter and viability of persuasive product

Multicultural and/or ESL and/or Bilingual Link: Translate the newsletter into other languages depending on class demographics.

Mathematics/Science Link and/or Humanities Link: Cite examples of persuasive arguments in the humanities.

School-to-Career/Tech Prep Link: Graphic artist, TV broadcaster, journalist

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Show a video clip of newscast

Students will: Role play a newscast

Class/team/individual product: Produce a newscast on global warming

Summative Assessment: Judge which newscast was most informative and why.

INDIVIDUAL JOURNAL ASSIGNMENT:

What aspect of broadcasting interests you?

HOMELINK:

Create an energy saving plan for your family and explain how you will persuade them to follow it.

NJCCCS 6.6.12.E.7: Students will be able to describe how and why historical and cultural knowledge can help to improve present and future environmental maintenance.

ESSENTIAL QUESTION: What choices does society have to make when faced with global warming?

ESSENTIAL CONCEPTS: Historical instances of environmental changes affecting society

4. PROTECTING AND CONSERVING

Textbook or Database: *Collapse* by Jared Diamond, *Silent Spring* by Rachael Carson, and *An Inconvenient Truth* by Al Gore

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: Film clips from *Pocahontas*

Students will: Compare and contrast the Native American view of nature versus the English view

Formative Assessment: List and identify the different viewpoints of nature between the Native Americans and the explorers

COMPREHENSION:

How would things be different if the explorers had embraced the Native American view of nature? For example, Virginia before and after colonization based on the film

Short-term / Cumulative Assessment: Evaluate differing viewpoints and create a persuasive essay based on the facts / opinion given.

APPLICATION:

Anchoring Activity / Anticipatory Set: “Colors of the Wind” Song and Lyrics from *Pocahontas*

Students will create a (class / team product): Detailed illustration/poster of environmental changes (before and after)

Formative Assessment / Rubric for Product: Poster Accuracy / Poster Judgment Rubric

Multicultural and/or ESL and/or Bilingual Link: Choose a modern example of an indigenous culture whose ecosystem is being destroyed by modern industry.

Mathematics/Science Link and/or Humanities Link: Measure acres lost and incidences of health problems due to pollution

School-to-Career/Tech Prep Link: Anthropologist, archeologist, forensic scientist

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Discuss this quote - “It is difficult to get a man to understand something when his salary depends upon his not understanding it” Upton Sinclair

Students will: Prepare a persuasive argument representing various view points on global warming.

Class/team/individual product: Debate

Summative Assessment: Critique the environmental debate on global warming, who won, didn’t, and why

INDIVIDUAL JOURNAL ASSIGNMENT:

How can we minimize the damaging effects of global warming?

HOMELINK:

Choose and enact one change you can make in the home to prevent global warming

NJCCCS 2.2.12.E.7: Students will be able to assess community awareness and understanding about a local, state, national or international health issue.

ESSENTIAL QUESTION: Why is it important for consumers and society to be informed about the health effects of global warming?

ESSENTIAL CONCEPTS: Public health education, the importance of education

5. PROVIDING EDUCATION

Textbook or Database: *An Inconvenient Truth* by Al Gore, *Silent Spring* by Rachael Carson, *Design for a Livable Planet* by Jon Naar

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: What are the qualities of a good teacher?

Students will: Make a list and discuss the qualities that make a good teacher.

Formative Assessment: Construct a mobile of the qualities that make up a good teacher

COMPREHENSION:

Select an age group to educate about the health effects of global warming and create a fairytale, storyboard, flipbook, pop-up book. Example “Goofus and Gallant”

Short-term / Cumulative Assessment: Story board / Pop-up book, fairy tale, flip-book, etc.

APPLICATION:

Anchoring Activity / Anticipatory Set: Teacher role play about what can go wrong during presentations, for example, gum chewing, slouching, etc.

Students will create a (class / team product): Present their product to the underclassman

Formative Assessment / Rubric for Product: Peer Evaluation

Multicultural and/or ESL and/or Bilingual Link: Create presentation in another language depending on the cultural make-up of the classroom

Mathematics/Science Link and/or Humanities Link: Educating the public about health issues related to global warming

School-to-Career/Tech Prep Link: Health professionals, teachers, public opinion surveys

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Present students with 3 different styles of survey.

Students will: Discuss specific actions individuals can take to protect the environment and conserve resources.

Research and compare the environmental stance of the political candidates /politicians.

Class/team/individual product: Create a comic strip to raise awareness about the health effects of global warming

Summative Assessment: Create a survey that will question individual knowledge of global warming effects

INDIVIDUAL JOURNAL ASSIGNMENT:

Be part of the solution –what can you do to educate others about the health effects of global warming?

HOMELINK:

Complete an environmental survey of ten people

NJCCCS 5.4.12.B.1: Students will be able to assess the impacts of introducing a new technology in terms of alternative solutions, costs, tradeoffs, risks, benefits, and environmental impact.

ESSENTIAL QUESTION: What new technologies are essential for prevention of global warming?

ESSENTIAL CONCEPTS: Using new technology to prevent global warming, the invention process

6. MAKING AND USING TOOLS AND/OR TECHNOLOGY

Textbook or Database: Toyota Prius Manual (hybrid engine), or other hybrid car manual; Prentice Hall *Earth Science*

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: Picture prompts of an industrialized city; identify what's wrong with the picture, look for environmentally unfriendly factors

Students will: Identify elements, causes, sources of pollution and what can be done to rectify them.

Formative Assessment: Picture Prompt Essay

COMPREHENSION:

Choose a new technology and discuss how it can improve our environment today. Examples: hybrid cars, solar panels, air filters, energy saving appliances

Short-term / Cumulative Assessment: Label a diagram of the chosen technology

APPLICATION:

Anchoring Activity / Anticipatory Set: View PowerPoint presentation of different technologies and energy consumption levels.

Students will create a (class / team product): Create plans for a new technology of their own device / Example Rube Goldberg device, solar powered machine

Formative Assessment / Rubric for Product: Holistic Scoring

Multicultural and/or ESL and/or Bilingual Link: Discuss the different technologies developed in other cultures.

Mathematics/Science Link and/or Humanities Link: Construct a time-line of the different technologies (Model T to Hybrid)

School-to-Career/Tech Prep Link: Inventors, Patent Office, Civil Engineers, Chemical Engineers, Mechanical Engineers

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Show an example of a simple tool made from easily available materials

Students will: Be able to create a 3-D model of their invention as a team using low cost materials

Class/team/individual product: The invention

Summative Assessment: Individual write-up of the creative method and design

INDIVIDUAL JOURNAL ASSIGNMENT:

Make an invention – keep a log of your project - your thoughts, ideas, and trials

HOMELINK:

Continue research and development of project

NJCCCS 2.6.12.C.1: Students will be able to engage in a variety of sustained, vigorous physical activities to enhance each component of fitness.

NJCCCS 5.5.12.A.2, 3: Students will be able to explain how plants convert light energy to chemical energy; describe how plants produce substances high in energy content that become the primary source of energy for life.

NJCCCS 5.8.12.C.2: Students will be able to know that Earth is a system in which chemical elements exist in fixed amounts and move through the solid Earth, oceans, atmosphere, and living things as part of geochemical cycles.

NJCCCS 5.8.12.C.3: Students will be able to recognize that the evolution of life on Earth has changed the composition of Earth's atmosphere through time.

ESSENTIAL QUESTION: How will planting a tree reduce global warming?

ESSENTIAL CONCEPTS: Requirements necessary for plant growth. How plants clean the atmosphere. Gardens and parks provide recreational opportunities.

7. PROVIDING RECREATION

Textbook or Database: Earth Science Textbook / Maps showing all parks in local towns/ Local census information

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: Nursery Rhyme: “*How Does Your Garden Grow?*” Show transparencies or slide show of formal gardens, urban garden plots, schools landscaped beds, flowerpots, colorful weeds, trees growing out of rocks.

Students will: Describe the process of photosynthesis, describe the carbon cycle, and list the factors necessary for plant growth.

Formative Assessment: Students will create a foldable listing all the elements necessary for plant growth.

COMPREHENSION:

90% of a tree’s food comes from the air, from the absorption of carbon dioxide through the process of photosynthesis. Hence, land based plants (tree’s, grass, etc.) and ocean based plants (algae, plankton, etc.) scrub the atmosphere. At the same time that humans are putting more carbon dioxide into the atmosphere through the burning of fossil fuels, humans are cutting down the Amazon rainforest and building more and more cities and roads. In our cities, where there is a lot of concrete and asphalt, city parks and gardens provide shade, reduce ambient air temperature, provide beauty, and provide recreational opportunities for sports and relaxation at the same time. The air is cleaner in parks. Back in Earth’s early history, the growth of plants drastically reduced the levels of carbon dioxide in the atmosphere and increased the levels of oxygen to the extent that allowed animals to evolve.

Short-term / Cumulative Assessment: Students will write an essay on cause and effect, explaining how a tree in a park helps both you and the environment.

APPLICATION:

Anchoring Activity / Anticipatory Set: Prior to class, collect samples of garden soil and weeds from various planting beds around the school. Have students compare soils and weed growth and hypothesize why they are different.

Students will create a (class / team product): In teams, students will analyze soils from various garden plots for soil color, and structure, and soil nutrient levels (P-N-K)

Formative Assessment / Rubric for Product: Lab Report on Soil Analysis

Multicultural and/or ESL and/or Bilingual Link: How does fertilizer use in the US affect the Colorado River flowing into Mexico? How does fertilizer runoff in the Mississippi River create the dead zone in the Gulf of Mexico?

Mathematics/Science Link and/or Humanities Link: Locate all the parks in your town and sum up the total area of parkland. Calculate the square footage of parks land per person in your town. Compare to other towns.

School-to-Career/Tech Prep Link: Horticulturalist, soils engineer, landscape architect, city planner

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Song: *Pave Paradise and Put Up a Parking Lot*. Present slideshow or transparency show of blueprints for Central Park, Golden Gate Park, followed by pictures of people using these parks for recreation.

Students will: Develop their visualization skills that will express their need for recreation.

Class/team/individual product: Team prepares a thematic landscape plan for a garden plot at the school. Plan shows colored "blueprint" with pictures of plants and recreational concept.

Summative Assessment: Teams orally present landscape plans, with colored renderings, and a description of the recreational concept. Class votes on the best plan, to be implemented at the school on Earth Day.

INDIVIDUAL JOURNAL ASSIGNMENT:

Describe how you feel after you have visited a garden or park.

HOMELINK:

Start a garden at home in a pot or a plot

NJCCCS 5.10.8.B.1: Students will be able to compare and contrast practices that affect the use and management of natural resources.

ESSENTIAL QUESTION: How are tax monies and consumer spending used to minimize the effects of global warming?

ESSENTIAL CONCEPTS: Conservation, consumer knowledge, reading consumer labels

8. ORGANIZING AND GOVERNING

Textbook or Data: Environmental Science: *The Story Behind the Story; Bioethics; Consumer Reports; An Inconvenient Truth* by Al Gore

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: *Jerry Maguire* "Show Me the Money" clip, lyrics of *Money, Money, Money* by the OJ's

Students will: Discuss how consumer spending habits and decisions can serve as an environmental protection tool

Formative Assessment: List several ways to reduce household energy consumption and cost.

COMPREHENSION:

Read and compare energy consumer labels regarding energy saving products. (What is consumer knowledge?)

Short-term / Cumulative Assessment: Calculate the cost effectiveness of a product of your personal choosing.

APPLICATION:

Anchoring Activity / Anticipatory Set: Excerpt from *An Inconvenient Truth* on China's efforts to reduce gas emissions in order to preserve the environment.

Students will create a (class / team product): Write letters or a petition to local governments voicing your concerns about environmental spending

Formative Assessment / Rubric for Product: Standard Language Arts Rubric

Multicultural and/or ESL and/or Bilingual Link: Compare U.S Budget for Environmental causes vs. China expenditures

Mathematics/Science Link and/or Humanities Link: Create pie charts of different governmental agencies' spending/ environmental protection budgets

School-to-Career/Tech Prep Link: Lobbyist, DEP, Public Science Positions, Environmentalist, Spokesperson

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: What is a green product? Show overheads of different examples

Students will: Create a new green product and design a logo / slogan for it

Class/team/individual product: Development of logo design for a green product.

Summative Assessment: Peer review of green products

INDIVIDUAL JOURNAL ASSIGNMENT:

If you were a politician, how would you modify governmental spending on the environment?

HOMELINK:

Write a newspaper editorial expressing your concern about the government spending on the environment

NJCCCS 6.6.12.E.7: Students will be able to describe how and why historical and cultural knowledge can help to improve present and future environmental maintenance.

ESSENTIAL QUESTION: Is environmentalism a moral priority?

ESSENTIAL CONCEPTS: Conservation, cultural values, sustainability

9. MORAL, ETHICAL AND SPIRITUAL BEHAVIOR

Textbook or Database: *Silent Spring* by Rachel Carlson

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: Show clips of buffalo slaughter from *Dances with Wolves*

Students will: Compare and contrast the attitudes and actions of natives and settlers using charts.

Formative Assessment: Evaluate compare and contrast charts

COMPREHENSION:

Create a Venn diagram for pioneer attitude toward buffalo vs. that of the Native Americans

Short-term / Cumulative Assessment: Evaluation of Venn diagrams

APPLICATION:

Anchoring Activity / Anticipatory Set: Native art slideshow with traditional native music

Students will create a (class / team product): Spiritual guidebook based on images and music

Formative Assessment / Rubric for Product: Presentation of guidebook

Multicultural and/or ESL and/or Bilingual Link: Locate natural traditions within the classroom

Mathematics/Science Link and/or Humanities Link: Calculate the rate of death among buffalo during 1860's

School-to-Career/Tech Prep Link: Conservationist, zoologist, anthropologist

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Video montage of endangered animals and species

Students will: Create a modern moral tale of conservationism

Individual product: Written moral tale of conservationism with respect to global warming

Summative Assessment: Quality of the moral tale

INDIVIDUAL JOURNAL ASSIGNMENT:

Write a point of view from an endangered animal

HOMELINK:

Research conservation organizations active within your state

NJCCCS 6.6.12.E.6: Students will be able to analyze the human need for respect for and informed management of all resources (sustainability), including human populations, energy, air, land, and water to insure that the earth will support future generations.

ESSENTIAL QUESTION: How can you minimize the human impact on the environment?

ESSENTIAL CONCEPTS: Going "Green", conservation, sustainability

10. AESTHETIC NEEDS

Textbook or Database: Book of historical photographs of an older city currently undergoing urban renewal

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: View video montage of old factories (to show progression of factories)

Students will: Compare/contrast aspects of old factories and their conditions to modern factories

Formative Assessment: Create a diorama of an ideal green factory

COMPREHENSION:

After creating their dioramas, students will present them to the class open for critique.

Short-term / Cumulative Assessment: Students will summarize the critiques of their individual projects

APPLICATION:

Anchoring Activity / Anticipatory Set: Show clips from Live Earth 2007 Concerts

Students will create a (class / team product): Students will create a group mural illustrating a green city

Formative Assessment / Rubric for Product: Mural / Presentation

Multicultural and/or ESL and/or Bilingual Link: Find a foreign city that has implemented green practices

Mathematics/Science Link and/or Humanities Link: Calculate energy savings for one green change

School-to-Career/Tech Prep Link: Students will list the careers that have the most aesthetically driven job descriptions

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Contemporary montage slideshow of “green” architecture

Students will: Apply their knowledge of green practices to group project

Class/team/individual product: Create 3-D model of a green city

Summative Assessment: Critique and Discuss Class Project

INDIVIDUAL JOURNAL ASSIGNMENT:

What are the advantages of going green?

HOMELINK:

Find things in your house that you can change so your home is green.

NJCCCS 6.3.12.H: Students will be able to demonstrate knowledge of world history in order to understand life and events in the past and how they relate to the present and the future.

ESSENTIAL QUESTION: What impact has climate change had on civilization?

ESSENTIAL CONCEPTS: Climate change, collapsed civilizations, sustainability

11. HISTORY AND POLITICS - “APOCALYPTO”

Textbook or Database: *Collapse* by Jared Diamond, *Apocalypto* by Mel Gibson

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: Clips of “*Apocalypto*” depicting environmental depletion

Students will: Identify changes in the environment and the impact it had on Mayan Civilization.

Formative Assessment: Creation of cause and effect chart

COMPREHENSION:

Students will compare and contrast man made causes of environmental degradation in *Apocalypto* with modern day civilization. Students will then make future predictions based on the "compare and contrast" writing assignment.

Short-term / Cumulative Assessment: Evaluation of chart

APPLICATION:

Anchoring Activity / Anticipatory Set: Easter Island Pictures

Students will create a (class / team product): A series of role plays based on the ecological destruction of Easter Island and the impact it is having on the islands.

Formative Assessment / Rubric for Product: Evaluation of role play

Multicultural and/or ESL and/or Bilingual Link: Locate areas around the world that are experiencing the same action

Mathematics/Science Link and/or Humanities Link: Measure the loss of glaciers in Alaska

School-to-Career/Tech Prep Link: Climatologist, meteorologist, anthropologist

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Picture of Alaska (melting of permafrost), Las Vegas, or Phoenix
Students will: Students will choose one area in the U.S. where growth cannot be sustained due to climatic/ environmental changes.

Class/team/individual product: Students will present a newscast highlighting the mismatch between rapid development and the inability of the environment to handle it.

Summative Assessment: Evaluation of newscast

INDIVIDUAL JOURNAL ASSIGNMENT:

I am the last person on Easter Island. Describe what happened to your island.

HOMELINK:

Discuss what changes your family would have to make if your city was not able to sustain development.

NJCCCS 1.2.12.B.2: Students will be able to improvise or compose melodies, stylistically appropriate harmonizing parts and rhythmic accompaniments using a chosen system of notations.

NJCCCS 3.2.12.B.7: Students will be able to use primary and secondary sources to provide evidence, justification, or to extend a position, and cite sources

NJCCCS 3.4.12.A.1: Students will be able to explore and reflect on ideas while hearing and focusing attentively

NJCCCS: 3.5.12.A.1: Students will be able to understand that messages are representations of social reality and vary by historic time periods and parts of the world.

ESSENTIAL QUESTION: What Do We Have to Lose?

ESSENTIAL CONCEPTS: Life depends on what environmental conditions?

12. THEATER/LITERATURE

Textbook or Database: Websites: www.poetry-online.org, www.bartleby.com, “*Rip Van Winkle*” by Washington Irving

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: Read an excerpt from the poem “*The Rime of the Ancient Mariner*”: Water, Water Everywhere nor Any Drop to Drink. Examples: Katrina Storm- no water available, World Trade Center 9-11- air quality at the site during clean-up

Students will: List the elements in the environment that sustains life, good health, and survival of living things.

Formative Assessment: Create a song, rap, or poem that highlights the vital aspects in the environment needed for life.

COMPREHENSION:

Utilizing the story by Washington Irving “*Rip Van Winkle*,” students will predict changes that may occur in the environment if we continue to do nothing or minimal steps toward decreasing global warming. Example: 20 years from now many trees will be made of plastic

Short-term / Cumulative Assessment: Write a similar story to Irving’s that will predict changes to Earth 20 years from now

APPLICATION:

Anchoring Activity / Anticipatory Set: Select several proverbs that can be utilized in citing wisdom towards environmental protection. Example: All for One, One for All

Students will create a (class / team product): An advertisement for a better ecology using a proverb in their design
Example: Carpe Diem, the Buck Stops Here, Do Onto Others as You Would Have Them Do Onto You, He Who Hesitates is Lost

Formative Assessment / Rubric for Product: Poster Contest based on Creativity / Message

Multicultural and/or ESL and/or Bilingual Link: Posters may include pictures / symbols to relate messages

Mathematics/Science Link and/or Humanities Link: Students will use www.e-pals.com to email a student in another country to ask how environmental changes are being addressed in their countries

School-to-Career/Tech Prep Link: Environmental Writers, Poets, Photographers, EPA employees

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Class will brainstorm possible local facilities that practice environmentally friendly actions in order to contact or visit

Students will: Take responsibility to select, visit, and research a local ecology / resource center.

Class/team/individual product: Students will pair up to work on their resource project, can be a video fieldtrip.

Summative Assessment: Review / critique of research project: critique must include visitation, identify the practices in place, future plans

INDIVIDUAL JOURNAL ASSIGNMENT:

What did you find most interesting about the research project presented in class.

HOMELINK:

Implement two ideas obtained in the research into your home.

NJCCCS 6.6.12.E.7: Students will be able to describe how and why historical and cultural knowledge can help to improve present and future environmental maintenance.

NJCCCS 5.10.8.B.1: Students will be able to compare and contrast practices that affect the use and management of Natural Resources.

ESSENTIAL QUESTION: What role do religious/spiritual beliefs play in shaping our attitudes toward the natural world?

ESSENTIAL CONCEPTS: Cultural and spiritual beliefs affect actions

13. RELIGION/PHILOSOPHY/LEARNING

Textbook or Database: *Worldviews, Religion and the Environment: A Global Anthology* by Richard Foltz

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: How do your faith/religion/spiritual beliefs affect the way you think about your role as a citizen?

Students will: Understand how a religious view of nature can impact environmental ethics and public policy.

Formative Assessment: Illustrated pamphlet created by a group

COMPREHENSION:

Evaluate the pamphlets and have groups predict the consequences of their religious/philosophical view of nature on global warming

Short-term / Cumulative Assessment: Skits, role play, poem, song or dance of expressions based on the pamphlet's message

APPLICATION:

Anchoring Activity / Anticipatory Set: Ad campaign "What would Jesus drive?" (Why)

Students will create a (class / team product): Radio program, clip or advertisement linking ethical consideration of global warming with dilemma of consumerism.

Formative Assessment / Rubric for Product: Peer assessment of radio clip/ advertisement

Multicultural and/or ESL and/or Bilingual Link: Various religious views

Mathematics/Science Link and/or Humanities Link: Demographics on population/ religions practiced in school

School-to-Career/Tech Prep Link: Visit from D. Hessel, Center of Theological Inquiry, Theologian speakers

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Clips of religious leaders' protest on George Bush's energy policy

Students will: Understand global warming is an ethical/moral issue and connect view of natural/ spiritual world with political action and role of a citizen.

Class/team/individual product: Role play of a press conference as representation of certain religious tradition in reference to global warming

Summative Assessment: Newspaper story or editorial or essay outlining content of the press conference and their opinion on what was said and why.

INDIVIDUAL JOURNAL ASSIGNMENT:

Respond to any quote given in multicultural section

HOMELINK:

Interview family member about feelings regarding the global warming crisis and what relationship their spiritual / religious viewpoints have on their opinion.

NJCCCS 1.2.12.D.3: Students will be able to produce an original body of work in one or more mediums that demonstrate mastery of methods and techniques.

ESSENTIAL QUESTION: How can you create environmental awareness through public art?

ESSENTIAL CONCEPTS: Elements of public art

14. VISUAL ARTS

Textbook or Database: Photographs of Public Gardens and Public Art

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: View slideshow of public art within Garden Environment

Students will: Compare and contrast public art/sculptural gardens throughout history and different geographical locations

Formative Assessment: Group discussion of comparing and contrasting activity (Evaluation)

COMPREHENSION:

Students will discuss the elements of public art and sculptural gardens in detail.

Short-term / Cumulative Assessment: Critique slides in an essay format

APPLICATION:

Anchoring Activity / Anticipatory Set: View clips from *Medicine Man*

Students will create a (class / team product): Layout for their public art sculptural garden including sculptures made from green products

Formative Assessment / Rubric for Product: Layout with measurements/ Blueprint for the formal layout of the landscape design

Multicultural and/or ESL and/or Bilingual Link: Comparison of different gardens (Example: France, Italy, and England)

Mathematics/Science Link and/or Humanities Link: Mathematical layouts of the landscape

School-to-Career/Tech Prep Link: Landscape architect, horticulturist, sculptor

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Taste test of different edible plants from the garden

Students will: Apply their landscape design to a designated area around the school

Class/team/individual product: Sculpture garden

Summative Assessment: Critique of the sculpture garden

INDIVIDUAL JOURNAL ASSIGNMENT:

What plants would you use to create visual monochromatic seasonal changes in your garden?

HOMELINK:

Bring in examples of plants from your home garden

NJCCCS 1.2.12.A.2.: Students will be able to craft dances with themes that have unity of form and content and demonstrate the ability to work alone and in small groups to create dances with coherence and aesthetic unity.

NJCCCS 1.2.12.B.2: Students will be able to improvise or compose melodies, stylistically appropriate harmonizing parts and rhythmic accompaniments using a chosen system of notations.

NJCCCS: Students will be able to analyze the human need for respect for and informed management of all resources including human populations, energy, air, land, and water to insure that the Earth will support future generations.

ESSENTIAL QUESTION: Address the issues of global warming through music.

ESSENTIAL CONCEPTS: Recycling, public awareness of global warming

15. MUSIC

Textbook or Database: Lyrics to the Songs: “*It Ain’t Easy Being Green*” by Jim Henson, “*End of the Road*” by Boyz to Men, “*Earth Day*” by Various Artist

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: Listening to the lyrics of the story “*It Ain’t Easy Being Green*” by Jim Henson
Students will: Compare and Contrast the life of Kermit the Frog to those of everyday citizens

Formative Assessment: Outline the reasons in a T table: Why is it hard to be Green? (Side 1) Use examples from the Jim Henson song. State an equivalent on: Why is it hard for people to be environmentally friendly? (Side 2)

COMPREHENSION:

Explain the need for awareness benefits for environmental issues.

Example: Earth Day, Live Earth 2007, Farm Aid, Katrina Relief Fund, World Trade Center Relief (9-11)

Short-term / Cumulative Assessment: Create a rap, song, poem, or dance as a public service announcement about an environmental issue affecting global warming.

APPLICATION: The necessity to recycle in today’s growing society?

Anchoring Activity / Anticipatory Set: Montage of pictures showing the affects of global warming to the song “*End of the Road*” by Boyz to Men

Students will create a (class / team product): Musical instrument using everyday objects to show objects can be used for more than one purpose.

Formative Assessment / Rubric for Product: Students will form bands using the musical instruments created to present the best of the groups’ public service announcements.

Multicultural and/or ESL and/or Bilingual Link: Find a song from your ancestral background that involves an environmental issue

Mathematics/Science Link and/or Humanities Link: *Recycle, Reuse, Reduce the 3r’s* by Jack Johnson

School-to-Career/Tech Prep Link: Guest Speaker from one of the following careers: Musicians, Song Writers, Recycling Engineer, Craftsman

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Excerpts from the Live Earth 2007 Concerts

Students will: Select one of the songs from the Live Earth 2007 Concerts and interpret the meaning of the lyrics to the songs.

Class/team/individual product: Perform a Live Earth Concert utilizing the rap, song, poem, or dance to be presented to the schools administration, class, or school.

Summative Assessment: Concert Presentations

INDIVIDUAL JOURNAL ASSIGNMENT:

Keep a record of your progression in the creation and presentations of performances.

HOMELINK:

Show performances to family and friends, musical review of peers

NJCCCS 4.5.E: Students will be able to use representations to model and interpret physical, social, and mathematical phenomena.

ESSENTIAL QUESTION: How can we mathematically prove that global warming is happening?

ESSENTIAL CONCEPTS: Graphing

16. MATHEMATICS

Textbook or Database: Mathematics textbook; "An Inconvenient Truth" by Al Gore

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: "An Inconvenient Truth" clips showing graph portions

Students will: Create a series of graphs based on the data presented by the instructor

Formative Assessment: Evaluation of the graphs

COMPREHENSION:

Create graphs projecting deforestation, temperature change, carbon dioxide levels and glacial depletion in the year 2050 based on rates of change.

Short-term / Cumulative Assessment: Graph evaluation

APPLICATION:

Anchoring Activity / Anticipatory Set: Clips from Film "The Day After Tomorrow"

Students will create a (class / team product): Collage, slideshow of their projections for 50 years from now.

Formative Assessment / Rubric for Product: Presentation of their findings

Multicultural and/or ESL and/or Bilingual Link: Make projections for other cultures

Mathematics/Science Link and/or Humanities Link: Effects of global warming on Yamato rainforest tribes

School-to-Career/Tech Prep Link: Meteorologist, climatologist

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Clips of environmental newscast

Students will: Hold a press conference releasing results of research

Class/team/individual product: Create presentation utilizing data collected in graphs, charts proving that global warming is happening

Summative Assessment: Evaluation of presentations

INDIVIDUAL JOURNAL ASSIGNMENT:

What can we do to prevent global changes?

HOMELINK:

Take a survey of neighbors: Who drives to work? Who takes public transportation? Graph your results.

NJCCCS 5.10.8.B.1: Students will be able to compare and contrast practices that affect the use and management of natural resources.

ESSENTIAL QUESTION: How can we as individuals in our daily lives conserve scarce resources by making wise decisions?

ESSENTIAL CONCEPTS: Conservation of resources, personal decision making skills

17. DAILY LIFE - PERSONAL DECISION MAKING

Textbook or Database: www.scilink.com, www.lighting.philips.com

KNOWLEDGE:

Anchoring Activity / Anticipatory Set: View pictures of faucets dripping, lights on throughout the house, etc.

Students will: Identify choices they make that can contribute to either conserving or wasting energy. For example, allowing the water to run while brushing teeth.

Formative Assessment: Make a summary list of the good choices.

COMPREHENSION:

Evaluate good and bad consumer choices and explain why.

Short-term / Cumulative Assessment: Evaluate student responses.

APPLICATION:

Anchoring Activity / Anticipatory Set: Show a montage of the 1965 NYC Blackout

Students will create a (class / team product): As teams, students will create a collage (poster) depicting the 1965 NYC Blackout, detailing the areas affected and the effects it had on the local population (such as looting, people stranded in elevators and subways).

Formative Assessment / Rubric for Product: Peer assessment of posters.

Multicultural and/or ESL and/or Bilingual Link: Research what other countries are doing to conserve energy.

Mathematics/Science Link and/or Humanities Link: Compare the cost of electricity today with 20 years ago.

School-to-Career/Tech Prep Link: Invite representatives from utility companies such as PSE&G or the MUA to speak to class on energy consumption and conservation.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anchoring Activity / Anticipatory Set: Lyrics from Cabaret..."Money Makes the World go Around" ...it is "money" but replace it with "energy"

Students will: Research energy consumption and costs over a twenty year time span.

Class/team/individual product: Create a chart that shows energy consumption today, energy consumption 20 years ago, cost of energy in 5 year increments from 20 years ago to the present, predicted energy consumption in 5 year increments from present to 20 years into the future

Summative Assessment: Explain how not making good decisions affects energy consumption and how this affects other scarce resources. (For example, could high energy costs affect the cost of manufacturing AIR JORDANS?)

INDIVIDUAL JOURNAL ASSIGNMENT:

What can you do to conserve energy?

HOMELINK:

Ask your parents/grandparents what they can recall about the 1965 NYC blackout.

MORAL / ETHICAL / SPIRITUAL REASONING AND DILEMMAS FOR CHARACTER EDUCATION

TEN ETHICAL DILEMMAS

New Jersey Standard 5.10: All students will develop an understanding of the environment as a system of interdependent components affected by human activity and natural phenomena.

Standard A.1: Distinguish naturally occurring processes from those believed to have been modified by human interaction or activity such as climate change and ozone production.

Standard B.2: Use scientific, economic and other data to assess environmental risks and benefits associated with societal activity.

ESSENTIAL QUESTION: How does the content of this unit reflect **character education** through Moral and Ethical dilemmas?

1. **Producing, Exchanging, and Distributing** [Economics]

ESSENTIAL QUESTION: How does the **Human Activity** of **Producing, Exchanging and Distributing** create moral/ethical dilemmas?

DILEMMA: You need to purchase a new car and have a specific budget. Do you buy a traditional car that causes pollution and is under your budget, or save money to buy a hybrid car that emits less pollution and is over your budget?

2. **Transportation**

ESSENTIAL QUESTION: How does the **Human Activity** of **Transportation** create moral/ethical dilemmas?

DILEMMA: You won a contest in which the grand prize is a Hummer. You know it only gets 5 MPG and is doing irreparable damage to the environment. What will you do with your Hummer?

3. **Communications**

ESSENTIAL QUESTION: How does the **Human Activity** of **Communications** create moral/ethical dilemmas?

DILEMMA: You're the owner of a small print shop, business is slow. You believe in global warming's destruction but a corporation offers you a large sum to print propaganda against global warming's effects. Should you take this job?

4. **Protecting and Conserving**

ESSENTIAL QUESTION: How does the **Human Activity** of **Protecting and Conserving** create moral/ethical dilemmas?

DILEMMA: You can either build a recycling plant that will cost taxpayer money, or save money by dumping recycled materials into a landfill. What do you do?

5. **Providing Education**

ESSENTIAL QUESTION: How does the **Human Activity** of **Providing Education** create moral/ethical dilemmas?

DILEMMA: You are a teacher covering civil disobedience. You know that some students may use the techniques you are teaching indiscriminately to promote ecoterrorism. Do you still teach civil disobedience?

6. **Making and Using Tools and/or Technology**

ESSENTIAL QUESTION: How does the **Human Activity** of **Making and Using Tools and/or Technology** create moral/ethical dilemmas?

DILEMMA: You are the president of a manufacturing company that is developing plans for new technology. One of these items will benefit the environment; the other will be used in classroom education. Your budget will only allow you to move forward with one plan. Which do you choose?

7. **Providing Recreation**

ESSENTIAL QUESTION: How does the **Human Activity** of **Providing Recreation** create moral/ethical dilemmas?

DILEMMA: An empty lot in your town is up for sale. As a member of the town council, you need to vote to determine who will be awarded the land. Do you go with a pollution-producing factory that will provide jobs for your voters or a park that will provide open space, basketball courts, and playing fields for them?

8. **Organizing and Governing**

ESSENTIAL QUESTION: How does the **Human Activity** of **Organizing and Governing** create moral/ethical dilemmas?

DILEMMA: You are the politician responsible for enacting the legislation for a nuclear power plant in a poor district. You know if you enact it, the electricity rates will be cut in half. However, the safety of the environment may be jeopardized. What will you decide?

9. **Moral, Ethical and Spiritual Behavior**

ESSENTIAL QUESTION: How does the **Human Activity** of **Moral, Ethical and Spiritual Behavior** create moral/ethical dilemmas?

DILEMMA: You are a real estate agent in charge of selling a parcel of land for a new school. You know that the land was used by a toxic waste company and has not been cleaned. You have the chance of making a huge commission on this sale. Do you tell the potential buyers about the possible contamination and lose the commission, or move forward with the sale?

10. **Aesthetic Needs**

ESSENTIAL QUESTION: How does the **Human Activity** of **Aesthetic Needs** create moral/ethical dilemmas?

DILEMMA: A corporation wants to build a new hospital that your town desperately needs. The proposed location is on wetlands that is the home to certain endangered species and is a natural filter for local water. As the mayor of your town, do you endorse the plan to build the hospital or preserve the wetlands?

**PRODUCTIVE THINKING SKILLS
DIVERGENT / CREATIVE THINKING**

1. BRAINSTORM MODEL

A. BRAINSTORM ALL OF THE _____.

AHA #1: Ways we consume energy

AHA #2: All of the ways air pollution spreads

AHA #3: All of the ways to convey information about the consequences of global warming

AHA #4: All of the ways in which society can protect and improve lifestyles

AHA #5: All of the qualities of a good teacher

AHA #6: All of the new innovations and technologies in the past ten years

AHA #7: All of the ways in which people enjoy the outdoors

B. BRAINSTORM AS MANY _____ AS YOU CAN THINK OF.

AHA #8: Government agencies or advocacy groups

AHA #9: Morals (Do the right thing)

AHA #10: As many areas and places of beauty

AHA #11: As many uncomfortable weather conditions

AHA #12: As many forms of media that deal with weather

AHA #13: As many religions

AHA #14: As many songs dealing with social causes

C. HOW MANY WAYS CAN YOU COME UP WITH TO _____?

AHA #15: Depict the environment through art

AHA #16: Measure things

AHA #17: Waste energy

Random Brainstorm: Save energy

Random Brainstorm: Conserve resources

Random Brainstorm: Save paper

Random Brainstorm: Reduce electric consumption

2. VIEWPOINT MODEL

A. HOW WOULD _____ LOOK TO A(N) _____?

AHA #1: Global Warming - glacier

AHA #2: A Gyre - whale

AHA #3: Hybrid Cars - Henry Ford

AHA #4: A Generator - Iceman Otzi

AHA #5: Stewardship - Goofus and Gallant

AHA #6: Solar Panels - Viking

AHA #7: Carbon Dioxide - sunflower

AHA #8: The Clean Air Act - Thomas Jefferson

B. WHAT WOULD A _____ MEAN FROM THE VIEWPOINT OF A(N) _____?

AHA #9: Deforestation - Native American from 1650

AHA #10: Neglected garden - weed

AHA #11: Modern skyscraper - Ancient Mayan

AHA #12: *An Inconvenient Truth* - William Shakespeare

AHA #13: Smog - Ra, the Sun God

AHA #14: Acid Rain - Marble statue

AHA #15: Smoke Stack - Kermit the Frog

AHA #16: Fossil Fuel Emissions - Line graph

AHA #17: Landfill - Recycled plastic bottle

C. HOW WOULD _____ VIEW THIS?

- 1: Ralph Nader
- 2: Iceman Otzi
- 3: Al Gore
- 4: Rachel Carson
- 5: Roger Revelle

3. **INVOLVEMENT MODEL (Personification / Inanimate object brought to life)**

A. HOW WOULD YOU FEEL IF YOU WERE _____

- AHA #1: A cloud without a sky
- AHA #2: A tire without a car
- AHA #3: A sneaker without a logo
- AHA #4: A catcher's mask
- AHA #5: A book without words
- AHA #6: A computer without a brain
- AHA #7: A playground without swings

B. IF YOU WERE A _____, WHAT WOULD YOU (SEE, TASTE, SMELL, FEEL, etc.)?

- AHA #8: signature on an important document, see
- AHA #9: conscience, feel
- AHA #10: mirror, see
- AHA #11: original paper on the Constitution, feel
- AHA #12: script, see
- AHA #13: inspirational quote, feel
- AHA #14: painting, feel

C. YOU ARE A _____. DESCRIBE HOW IT FEELS.

- AHA #15: musical instrument
- AHA #16: subtraction sign
- AHA #17: toothbrush
- Random Involvement / Personification: oil slick in an ocean
- Random Involvement / Personification: word in a book
- Random Involvement / Personification: bottle floating in water
- Random Involvement / Personification: Hummer at a gas station

4. **CONSCIOUS SELF-DECEIT MODEL**

A. SUPPOSE _____ . WHAT _____ .

- | | | |
|---------|---|---|
| AHA #1: | companies stopped making cars | would happen to the world economy |
| AHA #2: | there were no wind | would happen to air pollution |
| AHA #3: | there was no internet | would life be like |
| AHA #4: | a garbage dump was put in your town | how would the town react |
| AHA #5: | there was no paper | would environmentalists say |
| AHA #6: | there were no computers | affects the development of new machines |
| AHA #7: | Central Park was never built | would New York City look like |
| AHA #8: | the military & environmental budgets switched | would happen to each |
| AHA #9: | prisons didn't exist | predict how society would be different |

B. YOU CAN _____ . WHAT _____ ?

- | | | |
|----------|--|--|
| AHA #10: | redesign smoke stacks | would they look like |
| AHA #11: | choose who will be president next year | impact will that have on the environment |
| AHA #12: | cast a new version of <i>An Inconvenient Truth</i> | actor would you choose to play Al Gore |
| AHA #13: | be a new religious leader | would you change |
| AHA #14: | be a singer | message would you sing about |
| | | environmentalism |
| AHA #15: | own a green art gallery | art would you show |

AHA #16: use math to show it won't occur for 50 years would you do? Show it to the world or hide it?
 AHA #17: be a light fixture type of light would you want

5. **FORCED ASSOCIATION MODEL**

A. HOW IS _____ LIKE _____?

AHA #1:	fossil fuel	Gatorade
AHA #2:	emissions	butterfly wings
AHA #3:	the Kyoto Protocol	student council
AHA #4:	stewardship	keeping the house clean
AHA #5:	Ralph Nader	Joe Camel
AHA #6:	an SUV	competitive eater
AHA #7:	reforestation	an SAT prep course

B. GET IDEAS FROM _____ TO IMPROVE _____.

AHA #8:	ants	efficiency
AHA #9:	The Simpson's	stewardship
AHA #10:	Sponge Bob	alternative energy
AHA #11:	9/11	climate change
AHA #12:	Rip Van Winkle	hybrid cars
AHA #13:	Golden Rule	Kyoto Protocol
AHA #14:	Live Earth Concert	global awareness

C. I ONLY KNOW ABOUT _____. EXPLAIN _____ TO ME.

AHA #15:	graffiti	art
AHA #16:	circles	gyres
AHA #17:	gasoline	alternative energy
Random:	smog	greenhouse effect

6. **REORGANIZATION / SYNECTICS MODEL**

A. WHAT WOULD HAPPEN IF _____?

AHA #1: the ice caps melted
 AHA #2: there were no cars
 AHA #3: everyone spoke a different language
 AHA #4: there were no laws
 AHA #5: schools were closed
 AHA #6: the computer was not invented
 AHA #7: it was always summer

B. SUPPOSE _____ (HAPPENED) WHAT WOULD BE THE CONSEQUENCES?

AHA #8: government collapsed
 AHA #9: there were no religions
 AHA #10: there were no more trees
 AHA #11: we ran out of oil
 AHA #12: there were no authors
 AHA #13: there were no beliefs
 AHA #14: there were no arts

C. WHAT WOULD HAPPEN IF THERE WERE NO _____?

AHA #15: more rain forests
 AHA #16: musicians
 AHA #17: ozone layer
 Random: electricity
 Random: T.V.
 Random: water
 Random: grapes

CULTURAL LITERACY

1. Dates:

1950s - Roger Revelle hypothesizes that the global post-World War II economic expansion, driven by explosive population growth and fueled by coal and oil, will likely produce an unprecedented and dangerous increase in the amount of carbon dioxide in the Earth's atmosphere

1962 - Rachel Carson writes *Silent Spring*, the founding document of the American postwar environmental movement

1965 - November 9 - A chain reaction from a faulty relay in a Canadian hydroelectric plant knocks out the power for 14 hours in New York City and in much of the northeastern US and southern Canada

1967 - Syukuro Manabe and Richard T. Wetherald warn that human activities that increase the amount of carbon dioxide in the air, such as the burning of fossil fuels, are causing a greenhouse effect that will raise global temperatures.

1969 - The United States Congress creates the Environmental Protection Agency (EPA)

1970 - April 22 - The first Earth Day is celebrated in the United States by 20,000,000 Americans

1972 - The United States banned DDT

1972 - The Club of Rome publishes its report, *The Limits to Growth*, also known as the Meadows Report, announcing that Earth will face environmental disasters if the trends of pollution and depletion of Earth's resources continue

1972 - United States Congress revises Clean Air Act, allocating \$95,000,000 to local, state, and national air pollution control efforts

1974 - F. Sherwood Rowland and Mario Molina warn that chlorofluorocarbons (Freons), commonly used as spray propellants and in refrigeration, may be destroying the ozone layer in the atmosphere

1974 - Scientists report that acid rain transcends borders, as coal burning electric utilities in the US Midwest are blamed for high acidity in lakes of the northeastern US and eastern Canada

1974 - Brazil starts a major program to replace part of gasoline fuel in automobiles with ethyl alcohol, a mixture called gasohol

1976 - The US National Academy of Sciences reports that Freon used in various spray cans can deplete the ozone layer in the atmosphere, resulting in increased ultraviolet radiation at the surface level of the Earth

1976 - The US General Services Administration opens an environmental demonstration building in Saginaw, Michigan, in October; in addition to a solar collector in the roof for heating and cooling and double-glazed windows with overhanging roofs, the building features large masses of soil, called earth berms, piled against walls to reduce heat loss

1978 - Love Canal, a community near Niagara, New York, is evacuated after leaking containers of toxic chemicals are uncovered, alerting the public to the dangers of soil and groundwater pollution.

1978 - Chlorofluorocarbons (Freons) are banned as spray propellants in the US on the grounds that they damage the ozone layer in the atmosphere

1978 - The US government institutes the first steps toward banning lead from gasoline, mainly to protect the platinum catalysts in catalytic converters in automobile exhausts, not to protect the environment

1978 - To promote renewable resources, 25,000,000 people around the world celebrate Sun Day

1984 - The US government takes steps toward a complete ban on leaded gasoline in order to reduce lead concentrations in the lower atmosphere

1985 - The British Antarctic Survey detects a hole in the ozone layer over Antarctica, as ozone levels fall to their lowest amount in September; satellite records confirm that the hole had formed for several years previously

1987 - The headquarters of the Internationale Nederlanden Group Bank in Amsterdam, the Netherlands, is completed; its ten skylight-topped towers are contoured to maximize natural lighting, produce solar heating, and deflect the wind, making it one of the best examples of the "green architecture" movement for commercial buildings

1988 - In November, representatives from 30 nations meet in Geneva, Switzerland, to form the Intergovernmental Panel on Climate Change; its mission is to consider whether or not the greenhouse effect resulting from human-produced changes in atmospheric gases will cause global warming

1988 - The US Senate ratifies an international treaty, the Montreal Protocol, intended to reduce the use of chlorofluorocarbons, making the US the first nation to ratify the treaty; the treaty becomes effective in 1989 after widespread ratification by industrial nations

1988 - British scientists who have been monitoring wave height off of Land's End since 1962 report that the average wave height has increased from 7.4 ft to 9.0 ft; it is suspected that the change is one consequence of global warming (more frequent and more severe storms)

1989 – Montreal Protocol becomes effective

1989 - because of concerns about chlorofluorocarbons (CFCs) used in manufacturing foam polystyrene, McDonald's fast food chain replaces its "clamshell" foam package for the Big Mac and other sandwiches with a plastic that is not manufactured with CFCs

1989 - The oil tanker *Exxon Valdez* grounds in Prince William Sound off the coast of southern Alaska, leaking some 35,000 tons of oil into the ocean and having a devastating effect on the fragile ecosystem

1991 – Iceman Otzi, a Copper Age man, is found at the base of a melting glacier in the Italian Alps

1992 - Representatives of 178 countries meet at the Earth Summit in Rio de Janeiro, Brazil, and sign treaties intended to protect biological diversity and halt global warming

1995 – F. Sherwood Rowland, Mario Molina, and Paul Crutzen are awarded the Nobel Peace Prize in Chemistry for the recognition of chemical pathways that chlorofluorocarbons take in the upper atmosphere that destroy the ozone layer, permitting additional harmful ultraviolet radiation to reach Earth's surface

1995 - The United Nations Working Group I of the Intergovernmental Panel on Climate Change reports that "the balance of evidence suggests that there is a discernable human influence on global climate;" the report makes clear that influence can be characterized as global warming

1997 – In Kyoto, Japan, representatives from more than 150 countries accept the Kyoto Protocol, an agreement to reduce emissions of greenhouse gases, subject to ratification by their governments; they agree to reduce emissions of greenhouse gases by a total of 5.2 percent worldwide by 2010; by 2003 some 106 states will have ratified it (but not the US, Russia, or Australia)

1999 - Scientists studying the Greenland ice sheet determine that it has shrunk substantially since 1994, an effect thought to be caused by global warming

2000 - The US National Research Council concludes that Earth's surface temperature is rising as a part of global warming, but that the lower atmosphere is not affected at this time

2001 - The US in cooperation with France launches the satellite *Jason 1*, to monitor ocean circulation and help determine the relation between the oceans and the atmosphere

2001 - The US launches *TIMED* (Thermosphere-Ionosphere-Mesosphere-Energetics and Dynamics), a satellite that gathers data on the influence of the Sun and humans on the upper atmosphere

2006 - Al Gore writes *An Inconvenient Truth* and receives an Academy Award for the documentary

2007 - July 7 - Live Earth Concerts held worldwide to promote awareness of global warming

2. Names:

- Charles Greeley Abbot
- Rachel Carson
- Club of Rome
- Paul Crutzen
- Theodore Dunham, Jr.
- Al Gore
- Syukuro Manabe
- Mario Molina
- Ralph Nader
- Iceman Otzi
- Roger Revelle
- F. Sherwood Rowland
- Richard T. Wetherald

3. Ideas:

- Mt. Kilimanjaro
- Andes Mountains
- Grinnell Glacier
- Himalayan Mountains
- Italian Alps
- Love Canal
- Green Peace
- Antarctica
 - Greenland Ice Sheet
- South Pole
 - North Pole
 - Larsen Ice Shelf
 - Ecoterrorism

4. Words or Phrases:

- Acid Rain
- Air Pollution

- Air Quality Index
- Alternative Energy
- Atmosphere
- Atmospheric Cycle
- Biofuel
- Biomass
- Catastrophism
- Chlorofluorocarbons
- Climate
- Climate Change
- Clean Air Act
- Carbon Dioxide
- Conservation
- Coriolis Effect
- Deforestation
- Department of Energy
- Ecosystem
- Ecoterrorism
- Efficiency
- Ethanol
- El Nino
- Emission
- Environmental Protection Agency
- Ethanol
- Fossil Fuels
- Fuel Efficiency
- Gasohol
- Generator
- Glaciers
- Global Warming
- Greenhouse Effect
- Gyre
- Hybrid Cars
- Methane Deposits
- Ozone Layer
- Photosynthesis
- Preservation
- Recycling
- Renewable Resources
- Smog
- Smoke Stack
- Solar Energy
- Solar Panels
- Stewardship
- Sustainability
- Turbine
- Ultraviolet Radiation

RESOURCES

I. **BIBLIOGRAPHY** for TEACHERS PROFESSIONAL RESOURCES

Bunch, B. & Hellemans, A. (2004). **The History of Science and Technology: A Browser's Guide to the Great Discoveries, Inventions and the People Who Made Them from the Dawn of Time to Today.** New York: Houghton Mifflin.

Craddock, J (2006). **Video Hound's Golden Movie Retriever 2007.** Gale Group.

Dubeck, L. (2003). **Fantastic Voyages: Learning Science Through Science Fiction Films.** Springer, Verlag.

Green, J. (2002) **The Green Book of Songs by Subject. The Thematic Guide to Popular Music.** (5th ed. Updated and expanded). Nashville, TN: Professional Desk References, Inc.

Grun, B. (2005). **The Timetable of History: A Horizontal Linkage of People and Events.** (4th revised edition). New York: Touchstone.

Hirsch, E.D. Jr., Kett, J.F., & Trefil, J. (2002). **The New Dictionary of Cultural Literacy: What Every American Needs to Know.** (Revised and updated edition). Boston: Houghton Mifflin Company

II. **BIBLIOGRAPHY** for STUDENT ACCESS

Susan Jeffers. **Brother Eagle, Sister Sky**

David Klass. **California Blue**

Will Hobbs. **Changes in Latitudes**

Rita Gelman and Tui De Roy. **Down to Dusk in the Galapagos**

Jon Naar. **Design for a Livable Planet**

Earth Works Project, 1989. **Fifty Simple Things You Can Do to Save the Earth**

Dorothy Hinshaw Patent. **Fire: Friend or Foe**

Kathlyn Gay. **Greenhouse Effect**

Rob Thomas. **Green Thumb**

Michael Caduto and Joseph Bruchac. **Keepers of the Earth: Native American Stories and Environmental Activities for Children**

Caitlin Maynard, Thane Maynard and Stan Rullman. **A Kid's View of the Tropics**

New York Times. **NY Times Almanac**

Jean Craighead George. **One Day in the Tropical Rainforest**

Pamela Service. **Vision Quest**

Al Gore. **An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do About It**

Jared Diamond. **Collapse: How Scientists Choose to Fail or Succeed**

Rachel Carson. **Silent Spring**

Prentice Hall. **Earth Science**

Toyota. **Prius Manual**

Peter Turchi and Andrea Barrett, eds. **The Story Behind the Story**
Consumer Reports

Richard Foltz. **Worldviews, Religion and the Environment**

Local maps showing parks

Local census information

III. **Educational Films / Videos**

- The Life of Birds
- The Life of Animals
- East of Everest
- The Emerald Forest
- From the Heart of The World
- The Corporation
- PBS - Polar Bears Losing Ice
- The Future of Food
- An Inconvenient Truth
- March of The Penguins
- Koyaaniqquasti
- Powaqquasti
- Nagoyquasti

IV. Commercial Films / Videos

- The Day After Tomorrow
- Water World
- Artificial Intelligence
- An Inconvenient Truth
- The Arrival
- Split Second
- Apocalypto
- Medicine Man
- A Civil Action
- China Syndrome
- Jerry Maguire
- Erin Brokovich
- Fire Down Below
- Gorillas in the Mist
- Silkwood
- The American President
- Danger Zone
- Free Willy
- Hackers
- Pelican Brief
- On Deadly Ground
- Dances With Wolves
- The Edge
- The March of The Penguins
- Born Free
- The Bear
- Brother Sun, Sister Moon
- The Gods Must be Crazy
- Jungle Book
- Out of Africa
- Pocahontas
- Siddhartha

V. Literature / Language Arts (on reserve in Media Center for interest reading)

Fiction

- Joseph J. Romm. **Hell and High Water: Global Warming – The Solution and the Politics – And What We Should Do.**
- Noel Hodson. **AD2516: After Global Warming.**
- Susan M. Gaines. **Carbon Dreams.**
- Jay Kaplan. **Chilling Warmth: A Tale of Global Warming.**
- Rock Brynner. **The Doomsday Report.**
- Morgan Llywelyn. **The Elementals.**
- Kevin E. Ready. **Gaia Weeps: The Crisis of Global Warming – A Novel.**
- Paul Zetter. **Global Warming.**
- Robert Lieberman. **The Last Boy.**
- Robert Silverberg. **The New Springtime.**
- Nancy Kress. **Nothing Human.**
- William H. Venable. **Prelude to a Journey.**
- Tom Pollock, Jack Seybold. **The Rising: Journeys in the Wake of Global Warming.**
- John A. Topping. **Runaway: A novel of Political Intrigue and Global Warming.**
- Robert E. Dansley, Daniel J. Cox. **Solix Resettles Blue Mountain.**
- Dan Frishling. **The Biogene Conspiracy.**
- Allan C. Somersall. **Fresh Air for Life.**
- Debra Lynn Dadd. **Home Safe Home.**
- David Sirota. **Hostile Takeover.**
- Hazel Henderson, Daisaku Ikeda. **Planetary Citizenship.**
- Esty Winston. **Green to Gold.**
- David Steinman. **Safe Trip to Eden.**
- George Monbiot. **Heat.**
- David Gershon. **Low Carbon Diet.**
- Washington Irving. **Rip Van Winkle.**

Non-Fiction

- S. Fred Singer, ph. D., Dennis T. Avery. **Unstoppable Global Warming: Every 1500 Years.**
- Al Gore. **An Inconvenient Truth.**
- Tim F. Flannery. **The Weather Makers: The History and Future Impact of Climate Change.**
- Elizabeth Kolbert. **Field Notes from a Catastrophe.**
- John Houghton. **Global Warming: The Complete Briefing.**
- John Gribbin, Fred Pearce. **Global Warming.**

- Christopher Schoufele, Nancy Zumoff, Marlene Sims, Stan Sims. **Earth Algebra: College Algebra With Applications to Environmental Issues**
- Al Gore. **An Inconvenient Truth: The Crisis of Global Warming.**
- Patrick J. Michaels. **Meltdown: The Predictable Distortion of Global Warming by Scientists, Politicians and The Media.**
- Marcus Sedgwick, Amanda Root. **Floodland.**
- David Archer. **Global Warming: Understanding the Forecast.**
- Kim Stanley Robinson. **Sixty Days And Counting.**
- Hans-Joachim Schell Huber, Gary Yoke, Wolfgang Cramer, Tom Wrigley, Nebo's Nakicenovic. **Avoiding Dangerous Climate Change.**
- Spencer Weart. **The Discovery of Global Warming.**
- Rock Brynner. **The Domsday.**
- Patrick J. Michaels. **The Satanic Gases: Clearing The Air About Global Warming.**
- Hirofumi Uzawa. **Economic Theory and Global Warming.**
- Bruce Johansen. **Global Warming in the 21st Century.**
- Mary King Hoff, Mary M. Rodgers. **Atmosphere.**
- Paul Brown. **Global Warming : Can Civilization Survive?**

VI. Poetry

- The Indian Burning Ground, Freneau
- The Yellow Violet, Bryant
- Blight, Emerson
- Aftermath, Longfellow
- The April Snow, Very
- How Does Your Garden Grow?
- The New World, Very
- To the Dandelion, Lowell
- Crossing Brooklyn Ferry, Whitman
- Nature Essay, Emerson
- A Noiseless Pretend Spider, Whitman
- The Rime of the Ancient Mariner

VII. Drama (Stage Productions)

- An Enemy of The People by Henrik Ibsen
- Odin's Horse by Robert Koer
- Girl Science by Larry Loebell
- True Nature of All Being by Lisa A. Glordanc

VIII. Art Works

- Umbrellas by Christo
- Stereoscopes by William Kentridge
- Clearing Winter Storm by Ansel Adams
- The Artist's Garden at Giberny by Monet
- Water Lillies by Monet
- Lake Tenaya by Ansel Adams
- The wall by Christo
- Utopia by Angela Lain
- History by Peter David Hamilton
- The Gates by Christo
- Art made by Walking in Landscapes by Richard Long

IX. Music

- **Hand Me Down World** by The Guess Who
- **Ozone Layer** by Black Uhuru
- **Tree Hugger** by Rugburns
- **New Pollution** by Beck
- **Nature Avenue** by John Lodge
- **Hiroshima Hole** by Barefoot Jerry

- **Red Rain** by Peter Gabriel
- **Weather** by Amel Larrieux
- **Where the Blacktop Ends** by Keith Urban
- **For the Beauty of the Earth** by Paul Winte Consort
- **Pollution** by Tom Lehrer
- **Smog** by Miracles
- **Save Mother Earth** by Merl Saunders
- **Let's Make the Water Turn Black** by Mothers of Invention
- **Nine Types of Industrial Pollution** by Frank Zappa
- **Nature's Disappearing** by John Mayall
- **Nature Trail to Hell** by Weird Al Yankovk
- **In Every Corner of the Forest** by Bill Miller
- **Don't Go Near The Water** by Beach Boys
- **Big Yellow Taxi** by Joni Mitchell
- **It Ain't Easy Being Green** by Jim Henson
- **End of the Road** by Boyz to Men
- **Earth Day** by various artists
- **Recycle, Reuse, Reduce the 3r's** by Jack Johnson
- **Pave Paradise and Put up a Parking Lot** by Randy Newman
- **Money, Money, Money** by the OJ's
- **Money Makes the World Go Around** from *Cabaret*
- **Colors of the Wind** from *Pocahontas*
- Live Earth 2007 Concerts

X. **Resource People / Mentors**

- Local museum curator
- Local Politician
- Local Artist
- Art Gallery Owner
- Historian -- Teacher
- NJ Clean Energy representative
- Lawyer
- Earth Science and Biology Teacher
- Design Engineer
- Local store owner and or manager
- Librarian
- Sierra Club member

XI. **Field Trips**

- Museum of Natural History
- Liberty Science Center
- Tennfly Nature Center
- Ben Franklin Institute
- Jersey City MUA
- Hackensack Meadowlands Commission

XII. **Other Material** (CD-ROM, Laser Disc, Internet sites, etc.)

- www.EnvironmentalDefense.org
- www.Globalwarming.org
- www.Fightglobalwarming.com
- www.epa.gov/climatechange
- www.nrdc.org/globalwarming
- www.globalwarming.net
- www.Worldviewofglobalwarming.org
- www.ncdc.noaa.gov/climate/globalwarming.html
- www.Sciencedaily.com/news/earth_climate/global_warming
- www.Earthobservatory.nasa.gov/Library/GlobalWarmingUpdate
- www.skepticism.net/global_warming
- www.sierraclub.org/globalwarming
- www.solar-aid.org
- www.enviroweb.org
- www.nwf.org/globalwarming
- www.pbs.org/wgbh/warming
- www.BeGreenNow.com
- www.state.gov/g/oes/climate
- www.PlanetGreenGame.com
- www.energy.gov/environment/climatechange.htm
- www.lighting.philips.com
- www.bartleyby.com
- www.poetry-online.org
- www.e-pals.com
- www.scilink.com