

Project Bright IDEA 2: Interest Development Early Abilities

**A Jacob Javits Gifted Education Program
Funded by the US Department of Education
2004-2009**



**Concept: Systems
Topic: Global Warming
By: Jim Brooks and Susan Ashbridge
Grade level: 7th**

**The North Carolina Department of Public Instruction
Exceptional Children Division
Academically or Intellectually Gifted Program**

The American Association For Gifted Children at Duke University

Big Ideas Manifested

Topic – Global Warming
Text – *An Inconvenient Truth*
Author – Al Gore
Publisher/Date: Viking (Penguin Group),2007

| Concepts | Themes |
|---|---|
| <ul style="list-style-type: none"> • Systems • Global Responsibility • Patterns • Truth • Perspective | <ul style="list-style-type: none"> • Mankind’s dominion over Earth is counterbalanced by a responsibility for stewardship • Earth’s ecosystem is a complex system of dynamic, interrelated and interdependent subsystems • Scientific analysis of patterns enables accurate prediction of the stability or instability of complex systems • “Truth” is relative to one’s perspective and the lens through which one views phenomena |
| Issues or Debates | Problems or Challenges |
| <ul style="list-style-type: none"> • Global warming as a natural cycle or as the result of mankind’s actions • The responsibility of industrialized nations to reduce global warming • The responsibility of individuals to reduce their “carbon footprints” • The United States’ disproportionate contribution to global warming • The politics of greed and power • The interface between economic health and environmental health • Extinction of species due to global warming | <ul style="list-style-type: none"> • The acceleration of changes within ecosystems • Global warming and the potential for irreversibility of negative effects • Educating mankind about global warming • The politics involved within and among nations • The selection or exclusion of data related to global warming • The “selling” of environmental “crises”: distinguishing rhetoric from fact • The silent crisis: the problem of distance from the human experience |
| Processes | Theories |
| <ul style="list-style-type: none"> • Scientific investigation • Data interpretation • Propositional logic (if...then) • Creative Problem Solving | <ul style="list-style-type: none"> • Greenhouse gases cause global warming • The relationship between business, industry, and government impede the control of global warming • Global warming is a naturally occurring cycle in weather patterns • The global warming “crisis” is contrived and not supported by significant longitudinal data |
| Paradoxes | Assumptions or Perspectives |
| <ul style="list-style-type: none"> • The-long term costs of global warming | <ul style="list-style-type: none"> • Through technological prowess and |

| | |
|--|---|
| <p>offset any current economic gain that may result from avoidance of implementing environmental controls</p> <ul style="list-style-type: none"> • Anecdotal information used to protect living species from global warming may also lead to charges of “Proof by selected instance” • Individuals cannot remain isolated from the effects of global warming • One man (or woman) can make a difference | <p>innovation, mankind can permanently alter the Earth’s ecosystems</p> <ul style="list-style-type: none"> • Appeal to emotion is a powerful persuader • Change in a system produces changes in other systems, both known and unknown • Americans are the greatest consumers of goods and services in the world; therefore they are more responsible for global warming than any other group • Increases in the frequency of severe weather is due to global warming • The climate crisis presents us with an inconvenient truth |
|--|---|

Concept: Systems

Topic: Global Warming

Suggested Text Selection(s): *An Inconvenient Truth*, by Al Gore; *Al Gore's Science Fiction: A Skeptic's Guide To An Inconvenient Truth*, by Marlo Lewis Jr.

Look, Listen and Identify:

Intelligent Behaviors:

Story Focus: Persisting; thinking flexibly; thinking about thinking; questioning and posing problems (in particular); applying past knowledge; thinking and communicating with clarity and precision; taking responsible risks; and finding humor

Student Activities: Communicating with clarity and precision, argues a point effectively, adept at organizing and strategizing, communicates directly and to the point, efficient and practical, compares and contrasts, taking responsible risks

NC Standards:

Goal 1: Goal 2: Goal 3: Goal 4: Goal 5: .

Local Pacing Guide Timeline:

Thinking Skills Focus:.,Recognizing attributes; making observations, comparing and contrasting, seeing relationships, determining cause and effect, predicting, making analogies, inductive and deductive thinking, determining benefits and drawbacks, identifying points of view, determining the strength of an argument, setting goals, generalizing, decision making, planning and metacognition

Topic Focus: Global warming

Concept Focus: Systems

Overarching Generalizations:

- The Earth is dynamic
- Patterns allow us to predict future events
- Earth's ecosystems are interrelated
- Change is accelerating

More Complex Generalizations (Two or more concepts):

- Conservation of finite resources extends their availability
- Truth is relative to perspective

- **Truth is fixed and immutable**
- **Man is steward of the Earth over which he has dominion**
- **Thoughtful, sincere individuals can honestly disagree over the interpretation of data**

Directions for Teachers:

Present students with data sets and ask them to deduce or infer the meaning of the data presented. Choose data which seem to indicate a connection with a particular cause or potential effect, but which under further examination reveal a very different story. Discuss the “records’ or potential biases students may have had that led them to the conclusions they formed.

Present information to students in a number of different ways and ask them to use their metacognitive skills to determine whether or not the form and tone of the presentations influenced their viewpoint on the material presented.

Examine vocabulary presented in the two works referenced as a means of arriving at an understanding of the broad generalizations and concepts

Suggested Topics for Discussion:

- The impact of human activity on global warming
- Conservation as a moral duty
- Environmental politics
- Patterns in climatic change
- Appeal to sentiment? A valid strategy or salesmanship?
- Argument and counterargument

Suggested Vocabulary Words for Discussion:

| | | | |
|----------------|----------------|----------------|---------------------|
| carbon dioxide | permafrost | inconvenient | CFCs |
| equilibrium | habitat | illusion | Nobel Peace Prize |
| clear cutting | Kyoto Protocol | intermittantly | “greening” |
| ice sheet | bleaching | subsistence | natural variability |
| emissions | disinformation | strip mining | urban heat islands |
| EPA | ecosystem | refutable | natural variability |
| fossil fuels | biosphere | Infrastructure | concentration |
| extinction | ozone layer | geothermal | |
| dead zone | conveyor belt | Gulf Stream | Carbon trading |
| ice shelf | EPA | pandemic | Carbon footprint |

A Six-Step Process for Teaching Academic Vocabulary Terms:

1. Provide a description, explanation or example of the new vocabulary term.

2. Ask students to restate the description, explanation or example in their own words using complete sentences.
3. Ask students to construct a picture, symbol or graphic representing the term or phrase.
4. Engage the students periodically in activities that help them add to their knowledge of the terms in a booklet that they have created (Keep it simple.)
5. Periodically ask students to discuss the terms with one another (**Think** of your favorite vocabulary words from the unit; **pair** with a vocabulary buddy, **share** by discussing the vocabulary terms with your vocabulary buddy.) Teacher should model process each time before students do the Think, Pair, Share with Vocabulary Buddy.
6. Construct games to periodically involve students and allow them to play with the terms.

Robert Marzano

Vocabulary Extension:

Discuss the chemistry of scientific terms (prefixes and suffixes)

Vocabulary mastery chart

Examination of the power of emotive expression to sell an idea or product through advertising and timing

Word of the Day

Select a generalization(s) and essential questions. Introduce one or more of the following topics:

**Six Facets of Understanding
Global Warming**

| |
|--|
| Facet 1 – EXPLANATION |
| What are the major competing theories given as explanations for accelerating climatic change by Al Gore and Marlo Lewis? What evidence is provided in support of each of the theories? What examples are there of the same evidence being given in support of both theories, if any? |
| Facet 2 - INTERPRETATION |
| Al Gore uses visual imagery, metaphorical expression and technology as a means to expound on his message that the reversal of global warming trends is the moral obligation of all peoples, but in particular of Americans. Discuss how this makes you feel to be an American and a consumer. How did the visual images of drowning polar bears make you feel? Does it make you want to engage in the kind of political action he calls for? Why or why not? |
| Facet 3 - APPLICATION |
| Create a plan to reduce the size of your own “carbon footprint”. What changes in your lifestyle will this create in regard to your being inconvenienced or denied various experiences or pleasures you have become accustomed to? Identify those things you are most likely to resist giving up in order to reduce your carbon footprint. Identify how you might compensate for these changes. |

| |
|---|
| Facet 4 - PERSPECTIVE |
| Argue for or against awarding the Nobel Peace Prize to Al Gore for his work to stem global warming. Examine this in light of other individuals awarded this recognition before former vice-President Gore. What conclusion do you draw about the Peace Prize as a result of your examination and from your having read the Marlo Lewis Congressional paper? |
| Facet 5 – EMPATHY |
| Write a letter to yourself as if you were the son or daughter of parents whose livelihood is threatened by global warming in another part of the world. Take into account the perspective other citizens in other nations may have about American consumerism as part of your letter. |
| Facet 6 – SELF-KNOWLEDGE |
| Pair up with a partner and share why you think people, perhaps yourself included, turn a deaf ear and blind eye to environmental destruction and ecological issues? |

7th Grade

All conceptual activities must include discussing and/or relating to the selected generalization(s) through essential questions.

| | |
|---|---|
| <p>Mastery Learner (A) Sensing- Thinking</p> | <p>Interpersonal Learner (B) Sensing-Thinking</p> |
| <p>Goal 1.02 Create a time line of US federal legislation focusing on environmental protections passed in the 40 years since the photograph, “Earth Rise” was taken back in 1968.</p> | <p>SS1.02 Evaluate current drought conditions in the Western North Carolina as they relate to world precipitation changes displayed on the map on pages 76 and 77 in <i>An Inconvenient Truth</i>. What advice would you give to people thinking of building a home in this area?</p> |
| <p>V _ L _ S _ M _ B _ P _ I _ N _</p> | <p>V _ L _ S _ M _ B _ P _ I _ N _</p> |

| | |
|---|--|
| <p>Understanding Learner (C) Intuitive-Thinking</p> <p>What conclusions can you draw about the shrinking of the Larsen Ice Shelf shown in the photographs on pages 98 and 99 in <i>An Inconvenient Truth</i>? Draw a picture of the shelf as you would expect it to be two years from now.</p> <p>V _ L _ S _ M _ B _ P _ I _ N _</p> | <p>Self-Expressive Learner (D) Intuitive-Feeling</p> <p>Predict the impact of continual and accelerated Artic ice shrinkage on the polar bear population in this region. How does this effect also impact human populations there? With a partner, brainstorm as many ways this impact will be felt as you can.</p> <p>V _ L _ S _ M _ B _ P _ I _ N _</p> |
|---|--|

7th grade

All conceptual activities must include discussing and/or relating to the selected generalization(s) through essential questions.

| | |
|---|---|
| <p>Mastery Learner (A) Sensing- Thinking</p> <p>Name five sources of evidence Al Gore uses to support his thesis on global warming.. What examples of actions individuals can take to reduce global warming are suggested in <i>An Inconvenient Truth</i>?</p> <p>V _ L _ S _ M _ B _ P _ I _ N _</p> | <p>Interpersonal Learner (B) Sensing-Feeling</p> <p>What emotions are generated by the use of wildlife photography as support for Al Gore’s thesis? Are these emotions shared by others in your class?</p> <p>Based on Gore’s book, do you agree with proposals to allow drilling for oil in regions that are environmentally fragile? For example, would you support drilling for oil In Anwar?</p> <p>V _ L _ S _ M _ B _ P _ I _ N _</p> |
|---|---|

| | |
|--|--|
| <p>Understanding Learner (C) Intuitive-Thinking</p> <p>Does the film version of <i>An Inconvenient Truth</i> deserve the numerous awards it has received throughout film festivals across the world? Why do you think the film has won all of these awards? Because of its creativity? Its technical aspects? The message? The actors? Other reasons?</p> <p style="text-align: center;">V* <u> L S M B P I N </u></p> | <p>Self-Expressive Learner (D) Intuitive-Feeling</p> <p>Imagine an America in which there are no governmental environmental regulations. How would such a world affect your life, both at home and at school?</p> <p>Suppose mankind effectively minimized man-made pollution and global warming continued to occur? What then? What would you suggest to policy makers at that point?</p> <p style="text-align: center;">V <u> L S M B P I N </u></p> |
|--|--|

Real World Connections with Products:

| Mastery | Interpersonal | Understanding | Self-Expression |
|--|---|--|---|
| letters, petitions, research studies, critiques, behavioral changes in regard to consumerism | debate participant, clean-up days, feed the bin organizer, pen pal, | written analyses, charts and graphs, mathematical or chemical analyses, demonstrated skill with appropriate scientific instruments | Campaign items, t-shirts, poetry, handbooks |

Real World Applications:

Conservationist, politician, community advocate, community planner, author, poet, film maker

Real World Terms:

Compare, reflect, imagine, create, prove, list, write, analyze, illustrate, examine

Connect all products in the unit to real world applications reflecting the concept, generalizations and topic. The above is an example of how this might be accomplished.

Concept Focus: Systems

Overarching Generalizations:

- Systems are interdependent on Earth
- Systems operate on such a large scale, changes in those systems are hardly noticeable until a crisis point is reached

More Complex Generalizations (Two or more concepts):

- Systems seek equilibrium. The Earth will right itself even if mankind is no longer here
- Systems experience variance to some degree and sometimes this occurs over a vast expanse of time

Essential Questions

(Include concept and intelligent behavior that leads to deeper understanding of the concept through exploration of the generalization)

1. What impact can man have on the earth's ecological health?
2. What responsibility to protect the earth lies with 1st world nations as opposed to other less-developed countries?
3. How can an individual have an impact on the Earth?
4. How much of global warming is attributable to free market economies?
5. Why didn't the USA agree to the Kyoto Protocol
6. How much of Al Gore's message about the impending and irreversible environmental crisis is based on selective and unproven "Fact" How much of his daa has been disproven, if any?
7. Are global increase in warming cyclical, and is just another turn of the wheel?
8. Are environmental "terrorists" justified in their brand of advocacy for Mother Earth.
9. What are proven methodologies and promising technologies than can and are reducing greenhouse gases and global warming?

Materials Needed for Task Rotation and/or Task Rotation Menu

MetaCognitive Discussion (Essential Questions):

(Whole Group)

Conceptual Perspectives:

- Should everyone be expected to help reduce pollution and global warming in their community?
- How does technological change influence global warming, both positively and negatively?
- Who are the individuals most knowledgeable about global warming and what are their opinions

Intelligent Behaviors:

- What gifted intelligent behaviors would help solve the problem of determining the degree to which man is responsible for global warming
- What gifted intelligent behaviors would a city designer need to demonstrate as he planned to reduce global warming within the cities he creates?
- What gifted intelligent behaviors did Al gore present when he took his advocacy into the fray over global warming?
- As you think of the global community and problems that arise in a underdeveloped nations, what gifted intelligent behaviors are lacking in providing relief and services for these countries in regard to global warming?

Literary Perspectives:

- Who makes up the community of decision makers whose actions can directly impact the environment
- What is the difference between needs and wants and how does this bear on the world's ecology?
- How does an individual live in such a way as to be a steward of the Earth?
- What role should governments play in regulating environmentally fragile situations?
- What lifestyle changes will have to happen for industrialized nations, such as the US and China to significantly depress the negative impact they leave on the rest of the planet
- What is a world community?

Student/Teacher Reflections

Overarching Generalizations:

- **The Earth is dynamic**
- **Patterns allow us to predict future events**
- **Earth's ecosystems are interrelated**
- **Change is accelerating**

More Complex Generalizations (Two or more concepts):

- **Conservation of finite resources extends their availability**
- **Truth is relative to perspective**
- **Truth is fixed and immutable**
- **Man is steward of the Earth over which he has dominion**
- **Thoughtful, sincere individuals can honestly disagree over the interpretation of data**

Math Task Rotation Learning Activities

7th Grade

All conceptual activities must include discussing and/or relating to the selected generalization(s) through essential questions.

| | |
|--|--|
| <p style="text-align: center;">Mastery Learner (A) Sensing- Thinking</p> <p>Evaluate the points Marlo Lewis makes in refutation of Al Gore’s position on global warming, and choose three you find most compelling from each of Lewis’s categories, One-sided, Misleading, Exaggerated, Speculative, and Wrong. Compare and contrast the two men’s findings in regard to the numerical data used to establish each point. Display your findings on a drawing of an iceberg, with the greatest discrepancies used to create the thickest segment of the iceberg and the smallest used to indicate the melting side of the iceberg.</p> <p style="text-align: center;"><u>V</u> <u>L</u> <u>S</u> <u>M</u> <u>B</u> <u>P</u> <u>I</u> <u>N</u></p> | <p style="text-align: center;">Interpersonal Learner (B) Sensing-Feeling</p> <p>Students will engage in a pair-share activity in which they examine the number of times Al Gore uses emotional “hooks” in his book or the movie by the same name to convince the reader/viewer of the significance of his findings. They can compare this to the number of times he simply presents data, to see which strategy he gave more importance to. Emotional hooks would include things like endangered species photos, groups of people affected by global warming, devastation created by hurricanes, floods, droughts, etc. As a final product, students will present their conclusions in an oral discussion with the rest of the class.</p> <p style="text-align: center;"><u>V</u> <u>L</u> <u>S</u> <u>M</u> <u>B</u> <u>P</u> <u>I</u> <u>N</u></p> |
| <p style="text-align: center;">Understanding Learner (C) Intuitive-Thinking</p> <p>Create a Power Point presentation in which you select photos of the five endangered species you feel are most endangered. Put each species on a separate page with its name as a caption. Beneath the photo, include a point-line graph to document that species’ numerical decline. Extend your line graph to include your predictions of the continued decline of each species until it reaches extinction should current conditions prevail or become worse.</p> <p style="text-align: center;"><u>V</u> <u>L</u> <u>S</u> <u>M</u> <u>B</u> <u>P</u> <u>I</u> <u>N</u></p> | <p style="text-align: center;">Self-Expressive Learner (D) Intuitive-Feeling</p> <p>Write an outline for a screenplay in which you depict life along the coast of North Carolina if sea level rises by 6 inches over the next 100 years. Use the data presented in the two cited works and any other resources you have to support your scenario. Your screenplay outline needs to take place in one 24 hour period in one coastal community and to reflect your research. You may include illustrations should you so desire, but this is not required.</p> <p style="text-align: center;"><u>V</u> <u>L</u> <u>S</u> <u>M</u> <u>B</u> <u>P</u> <u>I</u> <u>N</u></p> |

=Real World Connections With Products:

| Mastery | Interpersonal | Understanding | Self-Expression |
|-----------------------------------|-----------------------------|----------------------|------------------------|
| Research Organizations | Design a reward certificate | Bumper sticker | book |
| Planning organization involvement | Design a poster | Power point | |
| Map skill | | | |

Real World Applications:

Real World Terms:

Connect all products in the unit to real world applications reflecting the concept, generalizations and topic.

Concept Focus: Change

Overarching Generalizations:

You are the change that you see.

More Complex Generalizations (Two or more concepts):

Change within promotes change without.

Essential Questions:

(Include concept and intelligent behavior that leads to deeper understanding of the concept through exploration of the generalization)

1. Should everyone be expected to help in their community?
2. How does technological change influence people's lives? Society?
3. What does it mean to be civilized?
4. Why should we study other cultures?
5. What happens when cultures of a difference meet with each other? (cultural diffusion)
6. How and why do beliefs change?
7. What is revolutionary change?

Materials Needed for Task Rotation and/or Task Rotation Menu

-
-

MetaCognitive Discussion (Essential Questions):

(Whole Group)

Conceptual Perspectives:

Intelligent Behaviors:

Literary Perspective:

Student/Teacher Reflections

Concept:

Topic:

Generalization(s):

Essential Question(s):

Task Rotation Menu

| Level | Mastery | Understanding | Self-Expressive | Interpersonal |
|--------------|----------------|----------------------|------------------------|----------------------|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |

Real World Connections With Products:

Real World Applications:

Real World Terms:

Connect all products in the unit to real world applications reflecting the concept, generalizations and topic. The above is an example of how this might be accomplished.

Concept Focus:

Overarching Generalizations:

More Complex Generalizations (Two or more concepts):

Essential Question:

(Include concept and intelligent behavior that leads to deeper understanding of the concept through exploration of the generalization)

Materials Needed for Task Rotation and/or Task Rotation Menu

-
-

MetaCognitive Discussion (Essential Questions):

(Whole Group)

Conceptual Perspectives:

Intelligent Behaviors:

Literary Perspective:

Student/Teacher Reflections:

**Student Reflections and Assessments
Task Rotation Learning Experience**

K-2

All conceptual activities must include discussing and/or relating to the selected generalization(s) through essential questions.

| | |
|---|--|
| <p>Mastery Learner (A) Sensing- Thinking</p> <p>V _ L _ S _ M _ B _ P _ I _ N _</p> | <p>Interpersonal Learner (B) Sensing-Thinking</p> <p>V _ L _ S _ M _ B _ P _ I _ N _</p> |
| <p>Understanding Learner (C) Intuitive-Thinking</p> <p>V _ L _ S _ M _ B _ P _ I _ N _</p> | <p>Self-Expressive Learner (D) Intuitive-Feeling</p> <p>V _ L _ S _ M _ B _ P _ I _ N _</p> |

Real World Connections With Products:

Real World Applications:

Real World Terms:

Connect all products in the unit to real world applications reflecting the concept, generalizations and topic. The above is an example of how this might be accomplished.

Concept Focus:

Overarching Generalizations:

More Complex Generalizations (Two or more concepts):

Essential Question:

(Include concept and intelligent behavior that leads to deeper understanding of the concept through exploration of the generalization)

Materials Needed for Task Rotation and/or Task Rotation Menu

-
-

MetaCognitive Discussion (Essential Questions):

(Whole Group):

Conceptual Perspectives:

Intelligent Behaviors:

Literary Perspective:

Student/Teacher Reflections

Math Student Reflections and Assessments

Task Rotation Learning Experience

K-2

All conceptual activities must include discussing and/or relating to the selected generalization(s) through essential questions.

| | |
|--|---|
| <p>Mastery Learner (A) Sensing- Thinking</p> <p>V _ L _ S _ M _ B _ P _ I _ N _</p> | <p>Interpersonal Learner (B) Sensing-Thinking</p> <p>V _ L _ S _ M _ B _ P _ I _ N _</p> |
| <p>Understanding Learner (C) Intuitive-Thinking</p> <p>V _ L _ S _ M _ B _ P _ I _ N _</p> | <p>Self-Expressive Learner (D) Intuitive-Feeling</p> <p>V _ L _ S _ M _ B _ P _ I _ N _</p> |

Real World Connections With Products:

Real World Applications:

Real World Terms:

Connect all products in the unit to real world applications reflecting the concept, generalizations and topic. The above is an example of how this might be accomplished.

Concept Focus:

Overarching Generalizations:

More Complex Generalizations (Two or more concepts):

Essential Question:

(Include concept and intelligent behavior that leads to deeper understanding of the concept through exploration of the generalization)

Materials Needed for Task Rotation and/or Task Rotation Menu

-
-

MetaCognitive Discussion (Essential Questions):

(Whole Group)

Conceptual Perspectives:

Should

Intelligent Behaviors:

Literary Perspective:

Student/Teacher Reflections:

Additional Support Materials:

Favorite Read-Alouds:

Finger Plays, Nursery Rhymes and Songs:

Video Clips:

Paintings & Prints:

Teacher Reflections

Literary Selection

Date

School

Grade

1. What were the strengths of the task rotations and/or other activities?
2. How did the task rotations and/or activities reveal students' Intelligent Behaviors? Please discuss how each Intelligent Behavior manifested it self.
3. What would you change or add the next time you taught this lesson?
4. What opportunities for growth does the resource unit have?
5. What were "ah ha's?" for the students? For teachers?

“Additional Comments

Understanding by Design
McTigh and Wiggins
IBSN 0871208555

Be My Neighbor by Maya Amera and John D Ivanko
Neighbors care for each other
Independence vs Community
The Power to Change

APPENDIX

A

Additional Instructional Concept-Based Activities