

Project Bright IDEA 2: Interest Development Early Abilities

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Concept: Systems

Topic: Ecosystems and Natural Resources

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Grade Level: 5

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 – Ecosystems and Natural Resources
 Text – John Muir America’s First Environmentalist
 Author –Kathryn Lasky
 Publisher/Date – Candlewick Press, 2006

Concepts	Themes
Protection Relationships Conflict Influence Preservation Conservation	All systems are related, have purpose, and change over time. Conflict may be natural or man-made; intentional and unintentional. Man’s irresponsible use of nature.
Issues or Debates	Problems or Challenges
<ul style="list-style-type: none"> ➤ Preservation VS growth ➤ Man-made resources influence on natural resources ➤ Interaction of nature and man 	Protecting the wilderness of Earth Promoting the responsible use of the Earth’s ecosystems and resources Educating people to protect and restore the environment Using lawful means to protect nature and promote responsible use
Processes	Theories
Problem-Solving Investigation Decision-Making Education	People need information about preservation, conservation, and their responsibilities to protect and restore the quality of the natural and human environment.
Paradoxes	Assumptions or Perspectives
Natural resource destruction can be positive for one system, and at the same time be negative for another system. Are humans intentionally using natural resources for insincere reasons or to further positive growth?	Protection measures are in place. Are we willing to commit to the preservation of our environment? Man has experienced positive growth, but sometimes at the expense of our natural resources.

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Natural Resources

Suggested Text Selection(s): John Muir, America's First Environmentalist
By Kathryn Lasky, Illustrator Stan Fellows

Look, Listen and Identify:

Intelligent Behaviors

Story Focus - Persisting, Questioning and Problem Solving, Metacognition, Creating, Imaging and Innovating

Student Activities Persisting, Managing Impulsivity, Listening with Understanding and Empathy, Thinking Flexibly, Striving for Accuracy and Precision, Metacognition, Taking Responsible Risks, Responding with Wonderment and Awe, Finding Humor, Thinking Interdependently, Thinking and Communicating with Clarity and Precision

NC Standards: Goal 1, Objectives 1.01, 1.06; Goal 5, Objectives 5.01, 5.05

Local Pacing Guide Timeline:

Thinking Skills Focus: Fluency, Flexibility, Originality, Brainstorming, Compare and Contrast, Relationships, Finding Patterns, Cause and Effect, Predicting, Point of View, Author's Purpose, Determining Benefits and Drawbacks, Summarizing, Metacognition, Formulating Questions, Decision Making, Planning, Generalizing, Problem Solving,

Topic Focus: Nature Preservation

Concept Focus: Systems – The interaction of man-made and natural systems relative to the Earth's environment.

Overarching Generalizations:

- Systems can be man-made or natural.
- Systems can have aesthetic quality.
- Systems are composed of subsystems and parts.

More Complex Generalizations (two or more concepts):

- Systems may be influenced by other systems.
- Systems are interdependent among one another.

Directions for Teachers:

Display sentence strips with the generalizations. Discuss topics and vocabulary words needed to gain a deeper understanding of the conceptual lessons.

Suggested Topics for Discussion:

- ❖ **Relationships between man-made and natural resources**
- ❖ **Environmentalists**
- ❖ **John Muir's love, devotion, and commitment to nature**
- ❖ **Need for preservation of natural resources**
- ❖ **Man VS Nature**
- ❖ **Responsible use of the Earth's ecosystems and resources**

Suggested Vocabulary Words for Discussion:

- Environmentalist
- Conservation/ Preservation
- Yosemite National Park
- Sierra Nevada Mountains
- Scootcher
- Bairns
- Nuthatches
- Aurora Borealis
- Star Clock
- Barometer
- Quivered
- Temperament
- Water Ouzel
- Glaciers
- Crevasse
- Sequoia National Park
- Diary
- Nightshirt
- Billowed

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 words and meanings using context clues.
- Role-play of words
- Word of the Day – define together, give examples, word wall
- Synonym chart

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

Six Facets of Understanding

Facet 1 – EXPLANATION
What actions are in place in our country to protect our environment, and how do these actions affect neighboring countries?
Facet 2 - INTERPRETATION
What are man-made resources? What are natural resources? How are man-made and natural resources interdependent of each other? How do man-made and natural resources relate to me?
Facet 3 - APPLICATION
How might we help to protect the system of natural resources in our country as well as neighboring countries?
Facet 4 - PERSPECTIVE
In your opinion, what is man doing to preserve our systems in nature?
Facet 5 – EMPATHY
How might a child from Canada, Mexico, or Central America feel about the preservation of our natural resources? What was the author of the book trying to make us feel and see?
Facet 6 – SELF-KNOWLEDGE

What are the limits of my misunderstanding and understanding of man-made and natural resources and their interaction? I wonder ...(questions).

Task Rotation Learning Activities

Grade 5

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>Create a timeline of John Muir’s walking journey.</p> <p style="text-align: center;">V*_L*_S*_M*_B*_P*_I*_N*_</p>	<p style="text-align: center;">Interpersonal Learner (B) Sensing-Thinking</p> <p>Write a persuasive letter to President Theodore Roosevelt supporting or opposing John Muir’s request.</p> <p style="text-align: center;">V*_L*_S*_M*_B*_P*_I*_N*_</p>
<p style="text-align: center;">Understanding Learner (C) Intuitive-Thinking</p> <p>Research and evaluate the influence of John Muir’s discoveries, inventions, and innovations on economic interdependence. Produce a product for presentation.</p>	<p style="text-align: center;">Self-Expressive Learner (D) Intuitive-Feeling</p> <p>What if John Muir had not met Theodore Roosevelt. What might have happened? Be prepared to present possibilities and alternatives.</p>

V * L _ S _ M _ B _ P * I * N * _	V * L _ S * _ M _ B _ P _ I _ N * _
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Task Rotation Learning Activities

Grade 5

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>In thinking about natural resources and growth in our city, state, or country, what impact does this growth have on the environment?</p>	<p>Interpersonal Learner (B) Sensing-Thinking</p> <p>John Muir loved listening to the “music” of the water, trees, wind, and songbirds. Team up with a friend. Go outside, close your eyes, and listen to the music of nature. Discuss what you heard with your friend.</p>
<p>V * L * S * M _ B _ P _ I _ N * _</p> <p>Understanding Learner (C) Intuitive-Thinking</p> <p>Debate the following idea within your group. Provide evidence for your position: Natural resource destruction can be positive for one system, and at the same time be negative for another system.</p>	<p>V * _ L _ S _ M * _ B * _ P * _ I _ N * _</p> <p>Self-Expressive Learner (D) Intuitive-Feeling</p> <p>Create a mural of one or more of John Muir’s wild places which became protected by the Sierra Club.</p>

V_*_L_S_M_B_P_*_I_*_N_*_	V_*_L_S_*_M_B_P_I_N_*_
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Real World Connections With Products:

- create, evaluate, explain, comprehend, apply, justify, describe, examine

Real World Applications:

- environmentalist, journalist, forester, Park Rangers, hiker, teacher, astronomer, entomologist, guide artist, writer, inventor, farmer, scientist, dendrologist

Real World Terms: Theodore Roosevelt,

John Muir
 Evaluation
 Economic Interdependence
 Debate
 Innovation
 Influence
 Debate
 Persuasive Letter

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.

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Overarching Generalizations:

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More Complex Generalizations (Two or more concepts):

Systems may be influenced by other systems.
Systems are interdependent among one another.

Essential Question

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

See page 10.

Materials Needed for Task Rotation and/or Task Rotation Menu

- ❖ **Chart paper**
- ❖ **Crayons, markers, colored chalk, water colors, brushes**
- ❖ **Paper – lined**
- ❖ **Pencils**
- ❖ **Mural Paper**
- ❖ **Computers**
- ❖ **Current newspapers**
- ❖ **Appropriate magazines**

MetaCognitive Discussion (Essential Questions):

(Whole Group)

Conceptual Perspectives:

1. Is destroying our natural resources necessary for growth?
2. What systems are harmed with growth? Why?
3. What is man doing to protect our environment?
4. How can we continue to preserve our natural resources?
5. How can the Sierra Club save our natural resources?
6. Why are we, as humans, destroying our natural resources and the wonderment of nature?

Intelligent Behaviors:

1. As humans, which intelligent behaviors could we exhibit to help with conservation efforts?
2. How do you demonstrate these intelligent behaviors on a daily basis?
3. Which intelligent behaviors are not being shown that contribute to the destruction of natural resources?
4. In what ways can we demonstrate the following intelligent behaviors in regard to the conservation of our natural resources?
 - Thinking Flexibly
 - Metacognition
 - Remaining Open to Continuous Learning
 - Responding with Wonderment and Awe
5. How did John Muir demonstrate the following intelligent behaviors?
 - Responding with Wonderment and Awe
 - Taking Responsible Risks
 - Managing Impulsivity
 - Gather Data through All Senses
 - Listening with Understanding and Empathy
6. Why is it important for humans to remain open to the preservation and conservation of natural resources?

Literary Perspectives

1. What caused John Muir to become an environmentalist?
2. How did John Muir interact with his environment?
3. If you were to write a biography of John Muir, what would be the four major points of his life on which you would focus?

Student/Teacher Reflections

Math Task Rotation Learning Activities

Grade 5

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

<p align="center">Mastery Learner (A) Sensing- Thinking</p> <p>In 1892, the Sierra Club was established. Choose a graph and display the growth of this club over the past 116 years.</p> <p align="center">V _ * _ L _ * _ S _ * _ M _ B _ P _ I _ N _ * _</p>	<p align="center">Interpersonal Learner (B) Sensing-Thinking</p> <p>Design a national park using polygons which would best represent the natural resources which are included in your park. Create a scale. Find the total area and the perimeter using both the metric system and the customary systems.</p> <p align="center">V _ * _ L _ S _ M _ * _ B _ * _ P _ * _ I _ N _ * _</p>
<p align="center">Understanding Learner (C) Intuitive-Thinking</p> <p>Research all of the national parks in the United States and their acreage. Display on a bar graph in a uniform fashion the land mass. Interpret the data by finding the mean, median, mode, and range of this set of data. Think about the location of each of the national parks in relation to the state in which it is located. Hypothesize on how you think the national park location affects the people that live in that state.</p>	<p align="center">Self-Expressive Learner (D) Intuitive-Feeling</p> <p align="center">V _ * _ L _ S _ * _ M _ B _ P _ I _ N _ * _</p>

<p>V_*_L_*_S_*_M_*_B_*_P_*_I_*_N_*_</p>	
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**Student Reflections and Assessments
Task Rotation Learning Experience**

Grade 5

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>Explain the positive and/ or negative ways in which growth has affected our environment. Which intelligent behaviors could we use to help protect our natural resources?</p> <p style="text-align: center;">V_*_L_*_S_*_M_*_B_*_P_*_I_*_N_*_</p>	<p style="text-align: center;">Interpersonal Learner (B) Sensing-Thinking</p> <p>Write a letter to conservation group about your opinions, views, and /or feelings on the changes in our environment. Are all of the changes negative? Which intelligent behaviors would you expect from these conservation groups? Are they the same as yours? Why or why not?</p>
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	<p>V * L S M * B * P * I N * _</p>
<p style="text-align: center;">Understanding Learner (C) Intuitive-Thinking</p> <p>Write a thank you letter to John Muir for his efforts in establishing one of the first national parks in America, Yosemite National Park. Do you think that John Muir demonstrated the intelligent behavior of taking responsible risks? Who or why not? Explain.</p> <p style="text-align: center;">V * L S M B P * I * N * _</p>	<p style="text-align: center;">Self-Expressive Learner (D) Intuitive-Feeling</p> <p>Write and perform a short skit which includes dialogue between John Muir and Theodore Roosevelt. Was the intelligent behavior, listening with understanding and empathy, exhibited? Explain.</p> <p style="text-align: center;">V * L S * M B P I N * _</p>

Concept: Systems

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Generalization(s)

Essential Question(s):

Task Rotation Menu

Level	Mastery	Understanding	Self-Expressive	Interpersonal
1	Identify 4 places that John Muir loved.	Compare/contrast 3 places that John Muir discovered.	Brainstorm with a partner all of the natural and man-made resources that you know exist on Earth.	If you were a raccoon, would you appreciate John Muir's work for the preservation of our natural resources?
2	Display on a flow chart the sequence of events in John Muir's life which led him to become America's first environmentalist.	After reading the four parts of the Sierra Club's Mission Statement, discuss what would have been the effects on our natural resources and ecosystems had this organization not been founded.	Imagine that the Sierra Club has asked you to speak up for the environment. What would you need to know and to experience beforehand?	Personal Journal Entry – What do you believe motivates conservation/preservation groups to do the work they do?
3	Name 4 reasons why John Muir was persistent in his ecological environmental protection?	Choose a place in Wake County (that you know of) that has not been preserved and could have been. Why was this area not preserved? What could have been done to conserve this area?	The Sierra Club has invited you to take action with them in speaking up for the environment. Prepare a speech to persuade other youth to take action.	As a part of a conservation/preservation group, what decisions would you make on how to help with conservation and preservation of our natural resources?

Additional Support Materials

**The Sierra Club
National Headquarters
85 Second Street
2nd Floor
San Francisco, CA 94105**

Sources

**MUIR OF THE MOUNTAINS by William O. Douglas
NATURE WRITINGS by John Muir
THE STORY OF MY BOYHOOD AND YOUTH
FIRST SUMMER IN THE SIERRA
THE MOUNTAINS OF CALIFORNIA
STICKEEN**

**OUR NATIONAL PARKS
A THOUSAND-MILE WALK TO THE GULF**

4. What opportunities for growth does the resource unit have?

5. What were “ah ha’s” for the students? For teachers?