

Standard 1.0 Environmental Issues

The student will investigate and analyze environmental issues ranging from local to global perspectives and develop and implement a local action project that protects, sustains, or enhances the natural environment.

TOPIC

A. ENVIRONMENTAL ISSUE INVESTIGATION

INDICATOR	CARROLL COUNTY CURRICULUM 6 TH GRADE
1. Identify an environmental issue.	American Chestnut Tree Blight and Reforestation Underwater logging of preserved America Chestnut trees
INDICATOR	
2. Develop and write research questions related to an environmental issue.	
INDICATOR	
3. Given a specific issue, communicate the issue, the stakeholders involved and the stakeholders' beliefs and values.	.
INDICATOR	
4. Design and conduct the research.	
INDICATOR	
5. Use data and references to interpret findings to form conclusions.	. Use carbon sequestration data to calculate effects on carbon footprint

TOPIC

B. ACTION COMPONENT

INDICATOR	
1. Use recommendation(s) to develop and implement an environmental action plan.	
INDICATOR	
2. Communicate, evaluate and justify personal views on environmental issue and alternate ways to address them.	Students evaluate the risks and benefits of underwater logging of American Chestnut Trees to the environment.
INDICATOR	
3. Analyze the effectiveness of the action plan in terms of achieving the desired outcomes.	Use carbon sequestration data to develop a plan for positively affecting human's carbon footprint.

Standard 2: Interactions of Earth’s Systems

The student will analyze and apply the properties of systems thinking and modeling to the study of Earth’s systems.

TOPIC

A. EARTH SYSTEMS

INDICATOR	
1. Analyze and explain the interactions of earth’s systems.	<p>Students analyze how earth’s spheres are connected and interdependent on each other by explaining the cause and outcomes of the American Chestnut tree blight.</p> <p>Students analyze how earth’s spheres are connected and interdependent on each other by studying American Chestnut trees preserved in water, and explaining the conditions that make it possible.</p>

TOPIC

B. SYSTEMS THINKING

INDICATOR	
1. Analyze, explain and apply the properties of systems thinking to earth systems interactions.	<p>Students analyze how an event in the biosphere, such as the American Chestnut tree blight, has affected carbon levels and atmospheric temperature and how these increased temperatures in return affects the biosphere.</p>

INDICATOR **	
2. Modeling: Use models and computer simulations to extent his/her understanding of scientific concepts.	

****See Science State Curriculum Skills and Processes**

Standard 3: Flow of Matter and Energy

The student will analyze and explain the movement of matter and energy through interactions of earth’s systems (*biosphere, geosphere, hydrosphere, atmosphere, and cryosphere*) and the influence of this movement on weather patterns, climatic zones, and the distribution of life.

TOPIC

A. CONSERVATION OF MATTER WITHIN EARTH SYSTEMS

INDICATOR	
1. Demonstrate that matter cycles through and between living systems and the physical environment, constantly being recombined in different ways.	Students analyze the correlation between dissolved oxygen levels and temperature then predict how this affects various forms of aquatic life.

TOPIC

B. ENERGY DISTRIBUTION THROUGH EARTH SYSTEMS

INDICATOR	
1. Analyze how the position and movement of the Earth in space determine distribution of heat and light.	
INDICATOR	
2. Explain that transfer of thermal energy between the atmosphere and the land or oceans produces temperature and density gradients in the atmosphere and the oceans.	
INDICATOR	
3. Explain that transfer of thermal energy between the atmosphere and the land or oceans influences climate patterns.	

TOPIC

C. INTERACTION OF PHYSICAL SYSTEMS AND THE BIOSPHERE

INDICATOR	
1. Analyze and explain the movement of matter and energy through earth’s systems and the influence of this movement on the distribution of life.	Use knowledge of dissolved oxygen levels to explain the correlation between the absence or existence of aquatic life and decomposition.

Standard 4: Populations, Communities and Ecosystems

The student will use physical, chemical, biological, and ecological concepts to analyze and explain the interdependence of humans and organisms in populations, communities and ecosystems.

TOPIC

A. CYCLING OF MATTER AND ENERGY

INDICATOR	
1. Explain how organisms are linked by the transfer and transformation of matter and energy at the ecosystem level.	Use knowledge of dissolved oxygen levels to form a correlation between the absence or existence of life and decomposition.

TOPIC

B. POPULATION DYNAMICS

INDICATOR	
1. Analyze the growth or decline of populations and identify a variety of responsible factors.	Students study how human needs, and rapid population growth have affected hard wood tree populations.

TOPIC

C. COMMUNITY AND ECOSYSTEM DYNAMICS

INDICATOR	
1. Explain how the interrelationships and interdependencies of organisms and populations contribute to the dynamics of communities and ecosystems.	

TOPIC

D. STABILITY IN POPULATIONS, COMMUNITIES AND ECOSYSTEMS

INDICATOR	
1. Use models and provide examples to show how the interaction and interdependence of populations contribute to the stability of populations, communities and ecosystems.	
INDICATOR	
2. Use models and provide examples to show how species' interactions may generate ecosystems that are stable for hundreds or thousands of years.	

TOPIC

E. DIVERSITY

INDICATOR	
1. Provide examples and evidence to show that a greater diversity of genes, species and/or environments increases the chance that at least some living things will survive in the face of large changes in the environment.	

ENVIRONMENTAL LITERACY CURRICULUM DRAFT

Standard 5: Humans and Natural Resources

The student will use concepts from chemistry, physics, biology, and ecology to analyze and interpret both positive and negative impacts of human activities on earth's natural systems and resources.

TOPIC

A. HUMAN IMPACT ON NATURAL PROCESSES

INDICATOR	
1. Analyze the effects of human activities on earth's natural processes.	
INDICATOR	
2. Analyze the effects of human activities that deliberately or inadvertently alter the equilibrium of natural processes.	

TOPIC

B. HUMAN IMPACT ON NATURAL RESOURCES

INDICATOR	
1. Analyze, from local to global levels, the relationship between human activities and the earth's resources.	

Standard 6: Environment and Health

The student will use concepts from science, social studies and health to analyze and interpret both positive and negative impacts of natural events and human activities on human health.

TOPIC

ENVIRONMENTAL LITERACY CURRICULUM DRAFT
A. NATURAL CHANGES AND HUMAN HEALTH

INDICATOR	
1. Identify and describe natural changes in the environment that may affect the health of human populations and individuals.	

TOPIC
B. HUMAN-INDUCED CHANGES AND HUMAN HEALTH

INDICATOR	
1. Describe and explain that many changes in the environment designed by humans bring benefits to society as well as cause risks.	

TOPIC
C. HAZARDS AND RISK ANALYSIS

INDICATOR	
1. Analyze and explain that human activities, products, processes, technologies and inventions can involve some level of risk to human health.	

Standard 7: Environment & Society

The student will analyze how the interactions of heredity, experience, learning and culture influence social decisions and social change.

TOPIC

A. ENVIRONMENTAL QUALITY

INDICATOR	
1. Investigate factors that influence environmental quality.	

TOPIC

B. INDIVIDUAL AND GROUP ACTIONS AND THE ENVIRONMENT

INDICATOR	
1. Examine the influence of individual and group actions on the environment and explain how groups and individuals can work to promote and balance interests.	

TOPIC

C. CULTURAL PERSPECTIVES AND THE ENVIRONMENT

INDICATOR	
1. Investigate cultural perspectives and dynamics and apply their understanding in context	

TOPIC

D. POLITICAL SYSTEMS AND THE ENVIRONMENT

INDICATOR	
1. Understand how different political systems account for, manage, and affect natural resources and environmental quality.	Students study how government agencies regulate and monitor the logging industry.

TOPIC

E. ECONOMICS AND ENVIRONMENT

INDICATOR	
1. Analyze and explain global economic and environmental connections.	Students study how the construction of hydroelectric dams built to supply our need for electricity caused 300 million healthy trees worldwide to be submerged under water.

TOPIC

F. TECHNOLOGY AND ENVIRONMENT

INDICATOR	
1. Investigate and examine the social and environmental impacts of various technologies and technological systems on the environment.	