

Options EHS Environmental Science Scope and Sequence

B

Unit Lesson

Objectives

Water Ecology

Skills Lesson: Proposing Logical Alternatives

Identify an unresolved problem.

Utilize scientific data and research to establish cause and effect.

Compare the positive and negative effects of previously enacted resolutions to a problem.

Propose a logical alternative to an unresolved problem or question.

Nonnative Species In Aquatic Ecosystems

Describe how invasive species impact an aquatic ecosystem.

Identify ways that invasive species are introduced into an aquatic ecosystem.

Examine various methods of addressing environmental problems that were traditionally solved by utilizing nonnative species.

Changing Waterways

Describe naturally occurring changes to waterways.

Evaluate ways humans impact waterways.

Propose alternative practices to reduce human impact on waterways.

The Water We Use

Identify sources of potable and non-potable water.

Describe the availability of water across the globe.

Assess the impact of water consumption and diminishing supplies on human activities.

Water Pollution

Identify sources of water pollution.

Unit Lesson

Objectives

Describe the effects of water pollution on local populations.

Explain ways that humans can reduce water pollution.

Groundwater

Describe the location and importance of the water table.

Assess the consequences of overuse and contamination of groundwater.

Explain how human use of groundwater has changed over time.

Skills used: determining independent and dependent variables

Water Policy

Identify laws and regulations in the United States that address water use and management.

Propose possible consequences of failing to conserve water.

Compare and contrast the processes of water reclamation, greywater use, and desalination.

Topic Test

Energy in Ecosystems

Energy Transformation

Discuss the main forms of energy in an ecosystem.

Explain how energy is transformed and conserved as it changes from one form to another.

Describe the impact of energy transformations on ecosystems.

Skills used: making logical connections, creating diagrams, compare and contrast

Energy Transfer

Outline the flow of energy in an ecosystem.

Describe how the amount of available energy changes between trophic levels in a food chain.

Explain the relationship between entropy and usable energy in a food chain.

Unit Lesson**Objectives**

Skills used: making logical connections, creating a flow chart

Photosynthesis in Plants

Explain the process of photosynthesis in plants.

Distinguish between the main types of carbon fixation.

Skills used: proposing logical alternatives

Global Connection: Deep Sea Ecologies

Explain the process of energy transfer in deep sea ecologies.

Topic Test

Resources

Skills Lesson: Conducting Valid Internet Research

Identify a topic to be researched.

Utilize internet search engines to gather information regarding the topic.

Analyze gathered information for bias.

Select valid internet data based on analysis.

What Are Natural Resources?

Explain how natural resources are produced.

Explain how fossil fuels are formed.

Explain how resource availability is limited by rates of use and renewal.

Skills used: making predictions, compare and contrast, researching with technology, making logical connections

Nuclear Power

Compare and contrast the processes of nuclear fission and nuclear fusion.

Unit Lesson**Objectives**

Describe uses of nuclear energy.

Examine possible consequences of using nuclear energy.

Skills used: researching with technology, modeling systems, compare and contrast, making logical connections

Resource Conservation

Assess the availability and allocation of resources.

Discuss problems associated with the use of non-local resources.

Compare and contrast uses of renewable and nonrenewable resources.

Propose alternatives to using nonrenewable resources.

Skills used: compare and contrast, proposing alternative solutions, researching with technology

The Social Costs of Resource Use

Compare and contrast the costs and benefits of using renewable and nonrenewable resources.

Evaluate the consequences of world dependence on fuels.

Explain how technology can be utilized in resource conservation efforts.

Skills used: making logical connections, evaluating explanations, compare and contrast

Topic Test

Ethics and Policy

Governments and Business

Illustrate how conservation efforts have positively impacted ecosystems.

Compare the effects of government sanctioned activities on ecosystems.

Assess the impact of government and business on energy efficiency.

Skills used: making logical connections, interpreting observations, supporting claims, making predictions, compare and contrast

Options EHS Environmental Science B **Scope and Sequence**

Unit	Lesson	Objectives
	Informed Policy	<p>Describe the influence that scientific knowledge has on society.</p> <p>Identify contributing factors to environmental policy decisions.</p> <p>Evaluate the benefits of monitoring environmental parameters when making policy regarding resource use.</p> <p>Skills used: compare and contrast, making logical connections, supporting claims, understanding cause and effect</p>
	Impact of Policy	<p>Assess the potential environmental consequences of policies that address social problems.</p> <p>Evaluate the effects of policies on global and local ecosystems.</p> <p>Propose possible effects of policies regarding sustainable land use.</p> <p>Skills used: supporting claims, plotting trends, making predictions, interpreting observations, compare and contrast</p>
	Milestones and Turning Points	<p>Illustrate the impact of major milestones in environmental science.</p> <p>Predict possible milestones in environmental policy.</p> <p>Describe the efforts of various countries to reduce resource and ecological depletion.</p> <p>Skills used: making valid criticisms, understanding cause and effect, researching with technology, making predictions, identifying trends</p>
	Global Connection: Newfoundland Cod Fishery Collapse	<p>Assess the societal and environmental consequences of government policy.</p>
	Topic Test	
The Environment and Society		
	Skills Lesson: Forming a Valid Hypothesis	

Unit Lesson

Objectives

Identify contributing factors of an observed event or process.

Determine relationships between contributing factors utilizing prior knowledge and research.

Create an explanation based on the determined relationships.

Utilize the explanation to form a valid hypothesis.

Limiting Factors and Humans

Identify the influences of environment on behavior.

Explain the impact of limiting factors on human society.

Describe factors that can impact the stability of a society.

Skills used: making logical connections, supporting claims, understanding cause and effect, making valid criticisms

Humans and the Energy Cycle

Describe the relationship between energy consumption and quality of living.

Explain the impact of energy flow and cycles of matter on society.

Skills used: creating a flow chart, making predictions, making logical connections, identifying trends and patterns

Societal Consequences

Determine the impact of biotechnology on society and the environment.

Explain the benefits and disadvantages of scientific and medical advancements to society.

Skills used: supporting claims, researching with technology, making valid criticisms, understanding cause and effect

The Environment and the Individual

Describe the relationship between the environment and personal health.

Identify synthetic environmental health hazards.

Skills used: making logical connections, interpreting observations, understanding cause and effect, compare and contrast

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Unit	Lesson	Objectives
	Other Influences on Personal Health	
		Describe the relationship between heredity and personal health.
		Compare and contrast the impact of genetic and environmental factors on individual and public health.
		Skills used: compare and contrast, understanding cause and effect, making predictions
	Topic Test	
The Environmental Impact of Humans and Technology		
	Natural Events and the Environment	
		Explain how human activities impact the effects of natural disasters.
		Describe the impact of natural disasters on local populations.
		Skills used: understanding cause and effect, graphing projections, making logical connections, supporting claims
	Human Events and the Environment	
		Evaluate the impact of different agricultural techniques on the environment.
		Describe the effects of large-scale environmental catastrophes.
		Skills used: making predictions, identifying trends, understanding cause and effect, graphing projections, compare and contrast, making valid criticisms, supporting claims
	Sustainability	
		Compare and contrast the impact of differing human lifestyles on sustainability.
		Describe future sustainability utilizing graphs and current data.
		Skills used: making predictions, identifying trends, understanding cause and effect, compare and contrast, graphing projections
	Effects of Technology	

Unit Lesson

Objectives

Describe the impact of energy producing technologies on the environment and the acquisition of natural resources.

Explain how energy producing technologies impact land fertility and aquatic viability.

Skills used: making predictions, identifying trends, researching with technology, understanding cause and effect, interpreting observations, evaluating explanations, making valid criticisms

Success Stories

Describe various ways communities are attempting to restore and protect ecosystems.

Give examples of emerging efforts designed to successfully address environmental issues.

Skills used: understanding cause and effect

Global Connection: Nuclear Fuel

Evaluate the environmental impact of using nuclear fuel.

Topic Test

Cumulative Test Review

Cumulative Exam