Unit 4 - Human Impact on Earth

Content Area: **Science**
Course(s):
Time Period: **Full Year**
Length: **Full Year**
Status: **Published**

Unit Overview

Humans impact the Earth with every action they make. Students will learn about renewable and nonrenewable resources, and how they impact the Earth. The amount of fresh water and salt water on Earth helps students to see that there is a finite amount of fresh water. They describe and graph data to provide evidence about the distribution of water on Earth. An investigation where students use solar energy to clean water will be used as a culminating activity to bring all of the concepts together.

Enduring Understandings

Human activities can change the Earth in a positive or a negative way. The negative changes are hard to reverse.
The amount of fresh water is finite and can be found in a variety of places.
Conserving resources helps to keep our planet healthy.
Renewable resources can be continually replaced, while nonrenewable are only used once and can run out.
Finding ways to use renewable resources, including renewable energy sources, help to keep our Earth healthy.

Essential Questions

How do human activities impact the Earth?
Is there any way to fix the changes made to the Earth?
Where do we get fresh water from? Is there an endless supply?
Why is it important to conserve resources?
What are the differences between renewable and nonrenewable resources?

Learning Objectives

Recognize that nearly all of Earth's available water is in the ocean.
Identify sources of fresh water on Earth: glaciers, underground streams, lakes, wetlands, and atmosphere.
Graph the amounts of percentages of salt water and fresh water on Earth.
Identify air, plants, water, animals, coal, oil, and natural gas as natural resources.
Classify air, plants, water, and animals as renewable resources, and coal, oil, and natural gas as nonrenewable resources.
Identify ways in which human activities affect the land.
Identify ways in which human activities affect vegetation.
Model the impact of human activity on various ecosystems.
Describe how acidic chemicals affect the growth of plants.

Identify ways that human activities impact water sources on Earth.
Identify ways that human activities impact air in Earth's atmosphere.
Describe ways that people are working together to clean up the air.
Identify ways in which human activities impact space.
Explain the importance of conserving Earth's resources and how recycling can help conserve resources.
Identify the benefits of trees in an urban environment.
Describe methods that engineers have developed for growing trees in crowded cities.
Describe the difference between nonrenewable and renewable energy sources.
Explain why it is important for humans to conserve energy resources.
Describe alternative energy resources, such as solar, wind, and hydroelectric energy.
Investigate how solar energy can be used to make water cleaner.
Work with a group to obtain information about ways individual communities use science ideas to protect Earth's resources and environment.
Combine information from their investigation to communicate their results to others.
Explore careers in science (climate, meteorology)
Propose ways local and global communities can engage digitally to participate in and promote climate action.

Standards: Content

3-5-ETS1-1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
3-5-ETS1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
3-5-ETS1-3	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
5-ESS2-2	Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.
5-ESS3-1	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources, environment, and address climate change issues.

Standards: Interdisciplinary

Assessment Evidence

Formative	Teacher observations, Class discussions, Lab Activities, Key concepts and vocabulary quizzes, Science Starter's/Do Nows, Open Ended Responses, Modeling, Simulations, Innovators Monthly Research, Lab Activities, Vocabulary Responses, Exit Questions, Interactive Digital Assessments embedded in Exploring Science Digital Book
Summative	Projects, Tests, Quizzes, lab skills demonstrations, and vocabulary quizzes.
Alternative & Benchmark	Alternative - Read to the student and chart oral responses. Word banks, sentence frames, oral responses, graphic organizers, observations, portfolios of student work, orally administered assessments, and anecdotal notes.

	Benchmark – LinkIt Benchmark Assessment, Teacher Generated Assessments
Assessment Evidence Resource	

Instructional Resources

Smartboard, Computers, Websites and digital interactives/models, Multi-media presentations, Video Streaming, Brain Pop, Middle School Science, Generation Genius Digital Curriculum, Mystery Science Digital Curriculum, Amplify Digital Curriculum, Microsoft 365, Primary and Secondary Source Documents, Assorted lab materials, tape, ruler, scissors, colored pencils, crayons, markers, construction paper, graph paper.

Instructional Resource List

Curricular Mandates

Below are the curricular requirements as defined in NJ Administrative Code and Statute

	Amistad		Diversity, Equity, and Inclusion
	Holocaust		LGBT and Disabilities (Grades 6-12)
	Climate Change		Asian American & Pacific Islander

Social Emotional Learning (SEL) Competencies

NJ Social and Emotional Learning Competencies & Sub-Competencies

	Self-Awareness		Relationship Skills
X	Responsible Decision-Making	X	Social Awareness
	Self-Management		

21st Century Skills & Themes

X	Global and Cultural Awareness	X	Technology Literacy		Planning and Budgeting
X	Creativity and Innovation		Financial Institutions		Risk Management and Insurance
X	Information and Media Literacy		Digital Citizenship		Economic and Government Influences
X	Critical Thinking and Problem Solving		Credit Profile	X	Career Awareness and Planning
	Civic Financial Responsibility		Financial Psychology		