Augusta Canal National Heritage Area
Eighth Grade Canal Sciences Program Outline

Standards:

GA:

S8CS5: Students will use the ideas of system, models, change and scale in exploring scientific and technological matters.

a. Students will observe and explain how parts a can be related to other parts in a system such as the role of simple machines in a complex machine.

S8P1 Students will examine the scientific view of the nature of matter. a. Distinguish between atoms and molecules g. Identify and demonstration the Law of the Conservation of Matter.

S8P2 Students will be familiar with the forms and the transformation of energy. a. Explain energy transformation in terms of the Law of Conservation of Energy. B. Explain the relationship between potential and kinetic energy. Compare and contrast the different forms of energy and their characteristics.

S8P3: Students will investigate relationship between force, mass, and the motion of objects. c. Demonstrate the effects of simple machines on work.

S8P5: Students will recognize characteristics of gravity, electricity, and magnetism as major kinds of forces acting in nature.

SC:

8-2.1 Explain how biological adaptations of populations enhance their survival in a particular environment.

8-2.7 Summarize the factors, both natural and man-made, that can contribute to the extinction of a species.

8-5 Students will demonstrate an understanding of the effects of force on the motion of an object.

Essential Question(s):

Environmental Science

1. What effects do humans have on the environment and animals habitats?
2. How do organisms depend on one another and adapt to changing ecosystems?
3. How do ecosystems maintain themselves and relate to the flow of energy?
4. Why is conservation and renewable resources, recycling, clean energy, and the effects of industrialization important?

Physical Science

1. How were factories run before the use of electricity?
2. How does transformation of energy apply to the process of hydro electric power generation?
3. What are practical examples of the laws of force and motion at work.

Objectives:

Environmental Science

Students will be able to determine the negative and/or positive effects humans have on the environment including population growth, power consumption, industrialization, water use, etc .

SWBAT establish an understanding and explain the interdependence of organism and their methods for generating stability within changing ecosystems.

SWBAT identify naturally occurring processes ecosystems use for maintenance.

Physical Science

Students will understand the transformation of energy and the use of simple machines in building hydro mechanically powered textile mills.

Students will understand the scientific Laws of force and motion, Law of gravity, and Law of Conservation and how they apply to the hydro electric process.

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Plan for Field Trip:

1. Students will take a 45 minutes eco-boat tour through canal aquatic and wood habits, seeing first hand a ecosystem rich in flora and fauna. They will learn the adaptations and physical features of animals needed to survive in their environment. Students will discuss the harmful effects of pollution, the necessity of conservation and recycling, as well as important physical and behavioral adaptations of plants and animals in response to humans, other animals, and changes in their habitats.
2. Students will take a walking tour of our hydro-electric power plant, following the water from the canal through the turbines and back to the river. Students get a first hand view of how hydro electricity is generated.
3. Students will participate in an interactive power point presentation on force and motion, gravity, conservation of energy And the hydro mechanical and hydro electric process.
5. Students will watch how the gravitational flow of water works for man using a working model of a canal lock and a working model of a turbine.
6. Students will answer questions throughout the learning experience to facilitate understanding and reinforce standards.

Timeline:

Eco-Boat Ride 45 minutes
Hydro-power walk 20 minutes
PowerPoint Presentation 10 minutes
Models and demonstrations 15 minutes

Materials:

-Power Point/Computer & Projector
Water
Models

Assessment:

Students will answer questions as they watch power point, demonstrations and models.
School classroom post visit discussion, research and writing activity.