

## Seventh Grade Canal Sciences Program Outline

### Standards:

**GA: S7CS6.** Students will communicate scientific ideas and activities clearly. a. Write clear, step-by-step instructions for conducting particular scientific investigations, operating a piece of equipment, or following a procedure. b. Write for scientific purposes incorporating data from circle, bar and line graphs, two-way data tables, diagrams, and symbols. c. Organize scientific information using appropriate simple tables, charts, and graphs, and identify relationships they reveal. **S7CS7.** Students will question scientific claims and arguments effectively. a. Question claims based on vague attributions (such as “Leading doctors say...”) or on statements made by people outside the area of their particular expertise. b. Identify the flaws of reasoning that are based on poorly designed research (i.e., facts intermingled with opinion, conclusions based on insufficient evidence). c. Question the value of arguments based on small samples of data, biased samples, or samples for which there was no control. d. Recognize that there may be more than one way to interpret a given set of findings. **S7L5.** Students will examine the evolution of living organisms through inherited characteristics that promote survival of organisms and the survival of successive generations of their offspring. a. Explain that physical characteristics of organisms have changed over successive generations (e.g. Darwin’s finches and peppered moths of Manchester). b. Describe ways in which species on earth have evolved due to natural selection. **S7L4.** Students will examine the dependence of organisms on one another and their environments. a. Demonstrate in a food web that matter is transferred from one organism to another and can recycle between organisms and their environments. b. Explain in a food web that sunlight is the source of energy and that this energy moves from organism to organism. c. Recognize that changes in environmental conditions can affect the survival of both individuals and entire species. **SC: 7-4.6** Classify resources as renewable or nonrenewable and explain the implications of their depletion and the importance of conservation. **7-4.2** Illustrate energy flow in food chains, food webs, and energy pyramids.

### Essential Question(s):

1. What characteristics do some animals employ in order to survive and how do they depend on their environments?
2. What is a food web and how does it exhibit the flow of energy?
3. What are renewable and nonrenewable resources and how does their diminution affect our world?

### Objectives:

Students will be able to differentiate between renewable and nonrenewable resources and discuss their necessitation.  
SWBAT investigate and determine what animals must do to survive and how they depend on their environments  
SWBAT identify a food chain and the flow of energy through it.

### Plan for Field Trip:

1. Students will alternate between two activities being conducted within the Interpretive Center, Cotton Room (new classroom), and/or courtyard. There will be a boat option at extra cost that can be included in the field trip.
2. In the IC/courtyard, students will participate in the Canal Quest Treasure Hunt where they will search for answers to scientific clues that include animal classification, conservation, and food chains, in order to complete each task. Each correct answer results in achieving a natural stone to accumulate a total of 10 in the end. This activity will develop cooperative learning skills, reinforce scientific main ideas, and develop higher order thinking skills for scientific inquiry.
3. In the Cotton Room, students will participate in an activity that will simulate the struggle for survival of an animal found in the NHA. They will work together in groups to experience how adaptations affect a species and how depleted resources affect the animal world.
4. For the boat option, students will experience the canal’s wildlife and vegetation up close. On our Eco-Active Boat Tour they will learn about conservation and resources, recycling, clean energy, the effects of industrialization, and what they can do now to prevent harm to our environment and future problems for our planet.
5. Students will answer questions throughout the learning experience to facilitate understanding and reinforce knowledge.

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### Timeline:

Canal Quest: 30 minutes

Survival Simulation (Cotton Room): 45 minutes

Boat Ride/Discovery Walk: 45 min./45 min.

### Materials:

-Copies of Canal Quest and the Animal Survival simulation

-Rulers and scrap paper for calculations

-Chalk, plastic forks, black beans, white beans, paper cups, and role sheets for simulation

-Collection bags, natural stones, and containers for Canal Quest

### Assessment:

Students will show what they learned by taking 5-10 minutes at the end of the field trip to participate in an open forum style question and answer session with their guide. This will give students an opportunity to clarify information, correct any misunderstandings, and review/reinforce knowledge.