Clearwater's Scope and Sequence for Science and Social Studies

An alignment of Clearwater education program activities with a typical NYS K-12 curriculum.

Science

Grade	Major Understandings	CW	EMEC	Classroom
K	**Life Science**			
	Identify plants and animals as living things		Plankton	Extravaganza
	Describe the differences between living and non-living		Beach	Extravaganza
	Identify plants		Beach	
	Sort animals by specific category		Fish	Extravaganza
	Observe and describe animals using different adaptations		Fish, Plankton	Extravaganza
K	**Earth Science**			
	Sort and order objects by their properties		Beach, Fish	Extravaganza
1	**Life Science**			
	Sequence stages in life cycle		Plankton	Extravaganza
	Compare and describe how animals move, obtain food		Plankton Fish	Extravaganza
1	**Earth Science**			
	Develop understanding of fossils as record of prehistory		Beach	
	Observe daily and seasonal changes		Here	
1	**Physical Science**			
	Observe how states of matter can change		Here	
	Describe ways humans pollute the earth		Wrap-up	
2	**Earth Science**			
	List types of pollution and how they affect the Earth		Wrap-up	
	Categorize the difference between: reduce, reuse, and recycle		Wrap-up	
	Classify and describe types of weather. Measure weather		Here	
2	**Physical Science**			
	Measurements made with non standard units		Beach, Seine	
2	**Life Science**			
	Describe food webs and how they affect different animals		Fish, Plankton	Extravaganza
	What plants need to live and survive		Plankton Beach	
3	**Earth Science**			
	Order and sequence the phases of the moon	Helm	Intro	

	and how they affect the tides			
	Order and communicate sequence of events in the water cycle	Coil down, Chem	Intro, Chem	
	Observe, compare, and identify cloud types	Weather	Here	
3	**Life Science**			
	Order, sequence, and communicate the stages of a life cycle	Plankton	Plankton	Extravaganza
3	**Physical Science**			
	Identify simple machines	Coil Down	Mech. Adv.	
4	**Earth Science**			
	Measure weather conditions and predict changes	Helm	Here	
	Describe the relationship of the sun as an energy source for living and non-living cycles	Plankton	Plankton	
	Describe characteristics and variations between living and non-living things.	Plankton	Plankton	
4	**Life Science**			
	Describe how plants and animals, including humans, depend on each other and the non-living environment	Plankton Fish	Plankton Fish	Extravaganza
	Review life cycle vocabulary	Plankton	Plankton	Extravaganza
	Describe some survival behaviors of living specimens	Fish	Fish	Extravaganza
5	**Earth Science**			
	Define what weather is.	Weather	Here	
	Understand and use instruments to describe current weather	Nav	Here	
	Using the water cycle describe how clouds are made		Here	
	Describe the four major cloud types	Weather	Here	
5	**Life Science**			
	Identify the items needed for photosynthesis	Plankton Chem	Plankton Chem	
	Describe the process of photosynthesis	Plankton Chem	Plankton Chem	
	Define what an ecosystem is.	Intro	Intro	*Environmental Assembly*
	Describe the difference between producer and consumer in terms of how each obtains nutrients.	Intro	Intro	
	Identify the relationships between producers, consumers, and decomposers in an ecosystem.	Plankton	Plankton	Extravaganza
	Discuss environmental factors such as competition for resources, interdependence, overpopulation, human land use, and	Intro	Intro	Extravaganza *H2O Pollution Clean Up*

	pollution.			
6	**Life Science**			
	Construct an ocean food web beginning with plankton	Plankton	Plankton	Extravaganza
	Recognize how individual behavior affects the quality of the environment	Back to Dock	Review	*Environmental Assembly* H2O Pollution Clean Up
	Understand the need for personal involvement in improving the environment	Back to Dock	Review	*Environmental Assembly* H2O Pollution Clean Up Pay or Pollute
	Complete a 7 day personal environmental impact log identifying actions that have an impact on the environment	*Post activity*		
	Identify at least 5 behaviors the student intends to do to maintain or improve the environment	*Post activity*		
6	**Physical Science**			
	Use a thermometer to measure water temperature	Chem	Chem Here	
	Demonstrate how simple machines reduce the force required to do work	Mech. Adv.	Mech. Adv.	
	Use a magnetic compass to take bearings on different objects to find compass coordinates	Nav.	Nav. Orient	
	Define erosion and identify the agents responsible for erosion	Coil down Chem	Beach	
7	**Life Science**			
	Develop and use dichotomous keys to identify organisms	Fish	Fish	Extravaganza
7	**Physical Science**			
	Identify the 3 states of matter	Intro	Intro	
8	**Earth Science**			
	Explain what causes the phases of the moon ands their affect on the tides	Intro	Intro	
	State how environment can affect inherited traits	Fish	Fish	Extravaganza
	Discuss the effect of "exotics" on the native species	Intro	Beach	
	Discuss the term 'limiting factors"	Intro	Beach	
	Ecosystems are self-sustaining	Intro	Intro	
	Discuss the region and peoples' impact on the loss of biodiversity	Intro	Intro	
9-12	**Biology/ Living Environment**			

	(Maintenance)			
	Compare anaerobic and aerobic respiration	Chem	Chem	
	Analyze the effect of O2 deprivation and discuss the systemic response	Chem (DO)/ fish	Chem Fish	
9-12	**Biology/ Living Environment (Evolution)**			
	Identify several introduced species and detail a plan for their removal	Coil down	Beach	
	Discuss the effects of "exotics" on the native species (they do a cattail vs phragmites debate)	Coil down	Beach	
9-12	**Biology/ Living Environment (Ecology)**			
	Energy flow in an ecosystem is in one direction through photosynthetic organisms to herbivores, carnivores, and decomposers	Plankton	Plankton Intro	
	Biodiversity is directly proportional to the resiliency of an ecosystem	Coil down	Plankton Fish	
	Humans have modified their environment resulting in negative environmental impacts	Intro Review	Intro Review	*Carbon Calculator*
	Energy shortages are directly proportional to high consumptive levels and highly populated regions	Intro Review	Intro Review	Pay or Pollute
	Assess human influence on balance of nature	Intro Review	Intro Review	
	Describe in detail the role of industrialization and technological advancement in the desecration of natural resources	History	History	
9-12	**Earth Science (surface processes and landscapes)**			
	Wind features, shoreline features, turbidity and current	Nav	Here	
9-12	**Earth Science (Astronomy)**			
	Identify cause of moon's phases, eclipses, and tides	Nav coil down	Intro	
9-12	**Earth Science (water and climate)**			
Fresh Water	Describe water cycle	Chem Coil down	Chem	
	Identify factors of runoff and infiltration	Chem	Chem	
	Identify factors which influence permeability and porosity	Chem Coil down	Chem	
	Relate pollution of air, land, and water to water quality	Chem Coil down	Chem	Pay or Pollute
Salt	Compare distribution of land and water	Chem	Chem	

Water		Coil down		
	Identify factors causing changes in temperature and salinity	Chem Coil down	Chem	
9-12	**Earth Science (Environmental Awareness and Review)**			
	Identify natural and man made pollutants	Intro Coil	Intro Review	
	Explain causes and effects of air, water, land and energy pollution	Intro Coil	Intro Review	*H2O Pollution Clean Up* Carbon Calculator
	Compare and contrast pollution reduction and prevention	Intro Coil	Intro Review	*Carbon Calculator*
9-12	**Meteorology**			
	Identify and read correctly weather instruments	Weather	Here	
	Relate pollution of air, land, and water to water supply	Intro	Intro Here	
	Identify factors causing changes in temperature and salinity	Intro	Intro Here	
	Explain the cause and effects of air, water, and land pollution	Intro	Intro Review	
9-12	**Physics**			
	Demonstrate how simple machines reduce the force required to do work	Mech. Adv.	Mech. Adv.	
	Discuss buoyancy and displacement	Intro	Intro	

Social Studies

Grade	Major Understandings	CW	EMEC	
K	**Curriculum: Self and Others**			
	Differentiate between values, ideas, customs, and traditions through folktales, legends, music, and oral histories.		Silence Intro	*Environmental Assembly*
	Recall their roles as citizens by accepting rights and responsibilities by learning about rules and laws		Wrap up	
	Develop awareness of similarities and differences that make each individual and group unique		Fish	
	Recognize Earth day, Native Americans (appreciating nature's gifts), pollution, three		Fish Beach	

	R's			
1st	**Curriculum: My Family and Other Families, Now and Long Ago**			
	Locate places on maps and globes and discuss how maps serve as representations of physical features and objects		Nav.	
	Express rights and responsibilities and roles of citizenship		Wrap up	
2nd	**Curriculum: My Community and Other United States Communities**			
	Recall vocabulary: vote, govern, laws		Wrap up	
	How can urban, suburban and rural communities affect the environment?		Wrap up	*H2O Pollution Clean Up*
	People depend on and modify the physical environment		Beach	Environmental Assembly
3rd	**Curriculum: Communities Around the World—Learning About People and Places**			
	Demonstrate historic chronology by placing important events on timelines	History	History	
	Spatial relationship described by direction, location, distance, latitude, longitude and scale	Nav	Orient-eering Here Nav	
4th	**Curriculum: Local History and Local Government**			
	Connecting local, NYS and US history by focusing on the following themes: Native Americans, European exploration, colonial and revolutionary periods, industrial growth and expansion, government—local and state	History	History	
5th	**Curriculum: The Western Hemisphere: The United States, Canada, and Latin America**			
	Compare geographic, economic and social/cultural understandings related to Western Hemisphere	History	History	
7th	**Curriculum: United States and New York State History**			
	Global Heritage of the American People Prior to 1500	History	History Intro	
	European Exploration and Colonization of the Americas	History	History Intro	
	A nation is created	History	History	
	Experiments in Government—Articles of Confederation and the Constitution	History	History	
	Life in the Nation—Pre-Industrial age	History	History	

	Identify the geography of settlement patterns and the development of cultural patterns	History	History Beach	
	Geographic factors affect settlement patterns and land use	History	Beach Intro	
8th	**Curriculum: United States and New York State History**			
	An Industrial Society - effects on the river and the way of life in the Hudson Valley	History	History	
	The United States Between Wars—The Roaring twenties, The Great Depression	History	History	
	The United States assumes worldwide responsibilities—WWII, US as a leader of the free world, the US in the post-Cold War World	History	History	
	The Changing Nature of the American People from WWII to the Present—Postwar society characterized by prosperity and optimism	History	History	
9-12	**Global History and Geography**			
	An age of revolution (1750-1914)—scientific revolution, role of industrial revolution	History	History	
9-12	**United States History and Government**			
	- Role/influence of geography on historical/cultural development - influences on early native American Indians - Influence on colonization patterns and colonial development - territorial expansion	History Timeline	History	
	- Geographic issues today - waste disposal - water/air pollution - shifting populations - energy usage - urban problems/challenges	History Timeline	History	H2O Pollution Clean Up *Carbon Calculator*
	- The Constitution: The Foundation of American Society - Native Americans (relations between colonists, trade, alliances, forced labor, warfare) - slave trade	History Timeline	History	
	- The Revolutionary War and the Declaration of independence - causes of revolution - slavery, African Americans and the outcome of the American Revolution—growth of "free black" population	History Timeline	History	
	- The Rise of American Business, Industry	History	History	

	and Labor 1865-1920 - railroads and Automobiles, building materials, energy sources (coal, oil, electricity)	Timeline		
	- World in Uncertain Times :1950-present - toward a post industrial world - changes within the United States—Energy Sources (nuclear), materials (plastics and light metals), problems (waste disposal, pollution, growing energy usage, depleting resources)	History Timeline	History	Carbon Calculator
	- 1972-1985 - Environmental Concerns (Three mile Island, Acid Rain, Toxic waste)	History Timeline	History	Carbon Calculator

High School Social Studies concepts utilized during all Clearwater programs:

- Change
- Citizenship
- Conflict
- Decision Making
- Environment and Sustainability
- Interdependence
- Needs and Wants
- Power
- Scarcity
- Science and Technology
- Urbanization
- Global Connections and interactions

K-12 ELA concepts utilized through the following activities:

- Rivery Reverie – guided poetry (can be used on boat and shore programs)
- Songwriting Workshop (classroom program 1-12)