



Merry Lea

*Environmental Learning Center
of Goshen College*

Water Quality 6th-12th Standards Correlations **Indiana Academic Standards for Science (2016)**

6th Grade

Standard
6.LS.1 Investigate and describe how homeostasis is maintained as living things seek out their basic needs of food, water, shelter, space, and air.
6.LS.4 Investigate and use data to explain how changes in biotic and abiotic components in a given habitat can be beneficial or detrimental to native plants and animals.

8th Grade

Standard
8.ESS.3 Research how human consumption of finite natural resources (i.e. coal, oil, natural gas, and clean water) and human activities have had an impact on the environment (i.e. causes of air, water, soil, light, and noise pollution).
8.LS.5 Explain how factors affecting natural selection (competition, genetic variations, environmental changes, and overproduction) increase or decrease a species' ability to survive and reproduce.

9th-10th Grade Biology

Standard
B.3.1 Use mathematical and/or computational representation to explain why the carrying capacity ecosystems can support is limited by the available energy, water, oxygen, and minerals and by the ability of ecosystems to recycle the remains of dead organisms.
B.3.2 Design, evaluate, and refine a model which shows how human activities and natural phenomena can change the flow of matter and energy in an ecosystem and how those changes impact the environment and biodiversity of populations in ecosystems of different scales, as well as, how these human impacts can be reduced.
B.3.3 Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions and identify the impact of changing conditions or introducing non-native species into that ecosystem.

11th-12th Environmental Science

Standard
Env.1.1 Understand and explain that ecosystems have cyclic fluctuations, such as seasonal changes or changes in population, as a result of migration, birth, and mortality.
Env.1.2 Understand and explain that human beings are part of Earth's ecosystems and give examples of how human activities can, deliberately or inadvertently, alter ecosystems.
Env.4.1 Explain environmental policies/organizations (Clean Water Act, Clean Air Act, Endangered Species Act, Species Survival Plan, Resource Conservation and Recovery Act, Department of Energy, and the World Health Organization) and identify their impact.
Env.4.2 Understand that environmental policies/decisions have negative and positive impacts on people, societies, and the environment.
Env.5.5 Identify the indirect and direct threats to biodiversity (e.g. habitat loss and destruction, invasion by exotic species, commercial over fishing and hunting, pollution, climate change, and bioaccumulation and biomagnification of toxins).
Env.7.3 Compare and contrast the effects of environmental stressors (i.e. herbicides, pesticides) on plants and animals. Give examples of secondary effects on other environmental components.



Indiana Environmental Literacy Guidelines for up to Grade 8

<u>Questioning, Analysis, and Interpretation</u>	<u>Knowledge of Environment Processes and Systems</u>	<u>Skills for Understanding and Addressing Environmental Issues</u>	<u>Personal and Community Action</u>
Identify specific environmental questions, problems, or situations related to local, national and global environmental issues.	Explain how humans' use of our resources can impact the environment and deplete resources.	Use environmental monitoring techniques to collect data about environmental issues.	Expand their personal connections with their local environment.
Design focused environmental investigations using appropriate measurements, observations and tools.	Identify and analyze individual, local, regional, national, and global effects of pollution.	Identify different forms of action that citizens can take: actions in the economic, political, and legal spheres; actions designed to directly improve or maintain the environment; or actions that persuade others to take action.	Develop a sense of place and understand their unique position in the global environment.
Use a variety of methods and sources to locate and collect reliable information and data about environmental topics.	Explain and give examples of how humans shape the environment.	Analyze the effects decisions, policies, and actions taken by individuals and groups on a particular issue have had on the elements, systems and processes of the environment.	
Classify, organize, and display data and information in ways that help others be able to understand, analyze and interpret the data.	Explain how the ways in which we manage our natural resources can impact the quality, availability and productivity of the resources.		



Indiana Environmental Literacy Guidelines for up to Grade 12

<u>Questioning, Analysis, and Interpretation</u>	<u>Knowledge of Environment Processes and Systems</u>	<u>Skills for Understanding and Addressing Environmental Issues</u>	<u>Personal and Community Action</u>
Develop, modify, clarify, and explain questions about important environmental issues, and describe why and how they arrived at those questions.	Predict how changes in the environment will impact populations.	Design and conduct a field investigation to gather information and data on an environmental issue in order to guide decisions on action steps.	Understand the history of environmentalism and be able to reference environmental legislation and related social movements, and articulate actions that are still needed.
Design and develop investigations to specific questions, problems or phenomena.	Analyze environmental cause and effect relationships and differentiate between correlation and causation.	Evaluate the consequences of an environmental issue, taking into consideration historical perspective, impacts of technological developments, and knowledge of similar issues.	
Use appropriate problem solving methods, tools, and technology to do the investigations.	Assess how changes in the availability and use of natural resources (especially water and energy sources) will affect society and human activities such as transportation, agricultural systems, and manufacturing.	Evaluate the effects, intended or unintended, of citizen action on the environment, political situation, and individuals involved.	

Program Synopsis

In Water Quality, students will use critical thinking skills correlated to Bloom’s Taxonomy. Students will create, evaluate, analyze, apply, understand, and remember knowledge by participating in group discussions centered around macroinvertebrate dipping, conducting lab experiments, canoeing and participating in water quality testing.