Indiana Science/Computer Science Content Connectors

Environmental Science

Environmental Systems	1	Use evidence to evaluate how interactions in ecosystems can contribute to stable conditions, lead to changes (e.g., moderate hunting, seasonal flood, volcanic eruption, sea level rise), or result in a new ecosystem. HS-ENV1-1A
	2	Use a computational representation to support the claim that human activities can alter ecosystems. HS-ENV1-2A
	3	Use a computational representation to illustrate how the ocean, atmosphere, or biosphere are changed by human activities. HS-ENV1-2B
	4	Use graphical or mathematical representations to illustrate the relationships among the hydrosphere, atmosphere, cryosphere, and/or biosphere. HS-ENV1-3A
	5	Use representations to determine how the relationships among Earth systems are changed by human activities. HS-ENV1-3B
	6	Use data to compare Earth systems in equilibrium to Earth systems in disequilibrium. HS-ENV1-4A
	7	Use data from a diagram of Earth's global climate system to describe how feedback loops stabilize changes in the system. HS-ENV1-4B
	8	Use data to evaluate, measure, and communicate a factor (e.g., biological, chemical, physical) within an ecosystem. HS-ENV1-5A
	9	Use a model to locate and describe the major Earth biomes based on descriptions. HS-ENV1-6A
	10	Use a model to describe that there is a relationship between the major Earth biomes and Earth's global climate system. HS-ENV1-6B
	11	Use a model to observe the difference between weather and climate. HS-ENV1-7A
	12	Use a model to demonstrate how absorption, reflection, and redistribution of solar energy influence climate systems. HS-ENV1-7B
	13	Analyze data to predict the impact of climate change (e.g., precipitation, temperature) on Earth Systems. HS-ENV1-8A
Flow of Matter and Energy	1	Use a diagram of sources and sinks to identify the movement of matter. HS-ENV2-1A

	2 Identify evidence which supports claims about energy transfer through sources and sinks. HS-ENV2-1B
	3 Use mathematical representations to support claims regarding the movement of matter and energy through an ecosystem in a food web. HS-ENV2-2A
	4 Use a model to describe how variations in Earth's orbit and tilt can lead to changes in climate by affecting the amount of sunlight reaching the Earth. HS-ENV2-3A
	5 Use a model to describe interactions relating to the flow of energy into and out of Earth's systems that have changed the Earth's climate at a variety of time scales from sudden (e.g., volcanic ash clouds) to intermediate (e.g., ice ages) to very long-term (e.g., tectonic cycles). HS-ENV2-3B
	6 Use data to compare the benefits and disadvantages of various energy forms (e.g., fossil fuels, nuclear energy, hydroelectric, wind, solar, geothermal, and biofuels). HS-ENV2-4A
	7 Use a model or simulation to analyze how fossil fuels are formed and the environmental effects of burning fossil fuels. HS-ENV2-5A
	8 Use a model or simulation to analyze how the availability of fossil fuels has shaped where people live and their way of life. HS-ENV2-5B
	9 Compare cost-benefit ratios of design solutions for developing, managing, and utilizing energy and mineral resources. HS-ENV2-6A
	10 Use data to evaluate how tools and other technologies used to manage natural resources address human cultural needs and sustainability issues, including the trade-offs of these tools. HS-ENV2-7A
Natural Hazards	1 Use evidence to explain that natural Earth hazards (e.g. earthquakes, tornadoes, and hurricanes) can have both short-term and long-term effects on the environment and human activity. [Clarification Statement: Discuss the hazard, exposure, and vulnerability of human populations based upon the development of society]. HS-ENV3-1A
Biodiversity	1 Use a model or simulation to support explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales. HS-ENV4-1A
	2 Describe how human activity affects Earth's environment and biodiversity and how people can help reduce their impact. HS-ENV4-2A
The Effect of Human Population and Activities on the Environment	1 Analyze data to describe the effect of an economic, political, religious, technological, or environmental factor on the size of the human population. HS-ENV5-1A

	2 **Identify why biodiversity in an ecosystem is important (e.g., humans depend on the Earth for resources; supports and enhances life on Earth; aids humanity by preserving landscapes of recreational or inspirational value).** HS-ENV5-1B
	3 **Use data to describe the relationships among management of natural resources, the sustainability of human populations, and biodiversity.** HS-ENV5-2A
	4 **Design and evaluate a technological solution that reduces impacts of human activities on natural systems. [Clarification Statement: Examples of data on the impacts of human activities could include the quantities and types of pollutants released, changes to biomass and species diversity, or areal changes in land surface use (such as for urban development, agriculture and livestock, or surface mining). Examples for limiting future impacts could range from local efforts (such as reducing, reusing, and recycling resources, including water conservation efforts) to large-scale geoengineering design solutions (such as altering global temperatures by making large changes to the atmosphere or ocean).]** HS-ENV5-3A
Environmental Policy	1 **Interpret data from an environmental policy and/or organization (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) to explain the intended outcome of the policy and/or organization.** HS-ENV6-1A
	2 **Use evidence to explain positive and negative effects of environmental policies/decisions on people, societies, and/or the environment.** HS-ENV6-2A