



North Carolina Department of Public Instruction

## **INSTRUCTIONAL SUPPORT TOOLS**

FOR ACHIEVING NEW STANDARDS

This document is designed to assist North Carolina educators in effective instruction of the new Common Core State and/or North Carolina Essential Standards (Standard Course of Study) in order to increase student achievement. NCDPI staff are continually updating and improving instructional tools to better serve teachers.

### *North Carolina Essential Standards Assessment Examples* *Earth/Environmental Science*

#### **What is the purpose of this tool?**

Assessment is a vital component of the teaching and learning process. These assessment examples are aligned to new content standards and reinforce teaching the standards to their intended level of deep mastery. The purpose of providing examples is to illustrate ways in which the standards or part(s) of the standards might be assessed in the classroom.

#### **How do I send Feedback?**

We intend the examples in this document to be helpful and specific. That said, we believe that as this document is used, educators will find ways in which the tool can be improved and made even more useful. Please send feedback to us at [feedback@dpi.nc.gov](mailto:feedback@dpi.nc.gov) and we will use your input to refine our instructional tool. Thank You!

#### **Where are the new Common Core State and North Carolina Essential Standards?**

All standards are located at <http://www.ncpublicschools.org/acre/>

## **Essential Standards • Earth/Environmental Science**

### **Earth in the Universe**

**EEn.1.1** Explain the Earth's role as a body in space.

### **Earth: Systems, Structures and Processes**

**EEn.2.1** Explain how processes and forces affect the lithosphere.

**EEn.2.2** Understand how human influences impact the lithosphere.

**EEn.2.3** Explain the structure and processes within the hydrosphere.

**EEn.2.4** Evaluate how humans use water.

**EEn.2.5** Understand the structure of and processes within our atmosphere.

**EEn.2.6** Analyze patterns of global climate change over time.

**EEn.2.7** Explain how the lithosphere, hydrosphere, and atmosphere individually and collectively affect the biosphere.

**EEn.2.8** Evaluate human behaviors in terms of how likely they are to ensure the ability to live sustainably on Earth.

Earth/Environmental Assessment Examples

Earth in The Universe		
Essential Standards	Clarifying Objectives	Assessment Examples
EEn.1.1 Explain the Earth’s role as a body in space.	EEn.1.1.1 Explain the Earth’s motion through space, including precession, nutation, the barycenter, and its path about the galaxy.	<p>1.1.1 Why does Earth experience precession?</p> <ul style="list-style-type: none"> <li>a. because the Earth revolves around the sun every 365 days</li> <li>b. because of the movement of the circumpolar stars and Polaris</li> <li>c. because the Earth is the third planet from the sun</li> <li>d. <b>because the plane of the moon’s orbit is tilted from the Earth’s elliptical plane</b></li> </ul>
	EEn.1.1.2 Explain how the Earth’s rotation and revolution about the Sun affect its shape and is related to seasons and tides.	<p>1.1.2 Why are the seasons in the Southern Hemisphere opposite to those in the Northern Hemisphere?</p> <p><i>(The earth revolves around the sun but it is tilted. The angle of the tilt does not change just the position of the planet. The summer is when that part of the globe is tilted towards the sun. If the northern hemisphere is tilted toward the sun the southern hemisphere would be tilted away. The part tilted towards the sun gets more sunlight and is warmer. The part tilted away wouldn't get as much light and would be colder. )</i></p> <p>1.1.2 Which is true about Earth’s motion through space?</p> <ul style="list-style-type: none"> <li>a. The Earth’s revolution changes the Sun—Earth gravitational pull.</li> <li>b. The Earth’s rotation causes annual changes in its surface temperatures.</li> <li>c. <b>The tilt of the Earth’s axis and its revolution around the sun produces seasons.</b></li> <li>d. The Earth’s precession affects the amount of heat reflected from its surface.</li> </ul>
	EEn.1.1.3 Explain how the sun produces energy which is transferred to the Earth by radiation.	<p>1.1.3 Which of the following chemical reactions produce the sun’s energy?</p> <ul style="list-style-type: none"> <li>a. Helium nuclei are combined by nuclear fusion.</li> <li>b. Oxygen is present to cause combustion of solar fuel molecules.</li> <li>c. <b>Hydrogen nuclei combine through nuclear fusion into helium.</b></li> <li>d. Helium and oxygen break down through nuclear fission.</li> </ul>

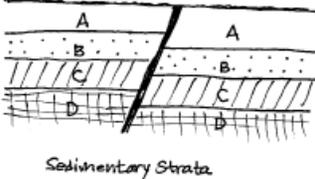
Earth/Environmental Assessment Examples

	<p>EEn.1.1.4 Explain how incoming solar energy makes life possible on Earth.</p>	<p>1.1.4 How is solar energy essential to plants?</p> <ul style="list-style-type: none"> <li>a. Solar energy maintains the internal temperature of the plants.</li> <li><b>b. Solar energy is converted to chemical energy used by the plants.</b></li> <li>c. Solar energy signals the plants to release leaves in the fall.</li> <li>d. Solar energy regulates the consumption of oxygen by the plant.</li> </ul> <p>1.1.4 How does the sun’s energy affect food webs on Earth?</p> <ul style="list-style-type: none"> <li>a. The ultraviolet radiation of the sun generates ozone for plants to support all life.</li> <li><b>b. The wavelengths of visible light stimulate plant cells to produce energy compounds by photosynthesis.</b></li> <li>c. The microwaves emitted by the sun stimulate animal reproduction in the rainforest.</li> <li>d. The infrared radiation reflected from the Earth’s surface drives the carbon, oxygen, and nitrogen cycles.</li> </ul>
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Earth/Environmental Assessment Examples

<b>Earth Systems, Structures &amp; Processes</b>		
<b>Essential Standards</b>	<b>Clarifying Objectives</b>	<b>Assessment Examples</b>
<p>EEn.2.1 Explain how processes and forces affect the lithosphere.</p>	<p>EEn.2.1.1 Explain how the rock cycle, plate tectonics, volcanoes, and earthquakes impact the lithosphere.</p>	<p>2.1.1 Construct a model illustrating sea floor spreading. Students should be able to explain this process.</p> <p>2.1.1 Diagram a simple continental and a simple oceanic subduction zone explaining the relation between earthquakes, the Benioff zone, and the formation of mountains by eruption of magmas formed from melting of ocean floor sediment.</p> <p>2.1.1 Diagram an oceanic rift zone demonstrating the evidence for upwelling of mantle rocks by means of absolute dating and paleomagnetic evidence.</p> <p>2.1.1 How does the subduction of crustal plates influence the rock cycle?</p> <p style="margin-left: 20px;"><b>a. The processes of heating and melting of rock layers form the parent material for igneous rock.</b></p> <p style="margin-left: 20px;">b. The processes of cementing and compaction form sedimentary rock.</p> <p style="margin-left: 20px;">c. The parent material is provided for weathering and erosion.</p> <p style="margin-left: 20px;">d. The intense heat and pressure forms metamorphic rock.</p>
	<p>EEn.2.1.2 Predict the locations of volcanoes, earthquakes, and faults based on information contained in a variety of maps.</p>	<p>2.1.2 Annotate a world map showing crustal plate boundaries by type and crustal hotspots.</p> <p>2.1.2 Construct a map relating plate boundaries, earthquakes and volcanoes. Use GIS data if available. Label where ocean crust is being subducted and formed by upwelling.</p> <p>2.1.2 Why are seismic waves of an earthquake more strongly felt at the epicenter of an earthquake?</p>

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		<p>a. because millions of small movements of the crust occur here  b. because most faults converge at the epicenter  c. <b>because the epicenter is directly the focus, the place inside the earth where the earthquake starts</b>  d. because crustal plates rise and fall with the ocean tides</p> <p>2.1.2 Approximately when did the fault occur?</p>  <p>a) <b>after layer B was deposited</b>  b) after layer C was deposited  c) after layer D was deposited  d) prior to all the deposition of all sedimentary strata</p>
	<p>EEn.2.1.3 Explain how natural actions such as weathering, erosion (wind, water and gravity), and soil formation affect Earth's surface.</p>	<p>2.1.3 Compare erosion by wind and by glaciers using photographs, topographic maps, and geologic maps.</p> <p>2.1.3 Explain how mechanical weathering can affect the rate of chemical weathering. Give examples.</p> <p>2.1.3 Why are wind, water, and gravity major agents of erosion rather than weathering?  a. because weathering is often limited to physical changes in earth materials  b. because weathering is often limited to chemical changes in earth materials  c. because erosion involves the stationary processes that break down rock  d. <b>because erosion involves movement of earth materials from one location to another</b></p>

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		<p>2.1.3 From a scientific perspective, which of the following sequences of action is the best way to solve the problem of wetland erosion?</p> <p><b>a. add sediments, plantings, monitor plantings</b>  b. dredging, sand bags, plantings  c. dredging, hard stabilization, plantings  d. hard stabilization, sediment transport, pesticide treatment</p>
	<p>EEn.2.1.4 Explain the probability of and preparation for geohazards such as landslides, avalanches, earthquakes and volcanoes in a particular area based on available data.</p>	<p>2.1.4 In small groups, prepare a brochure or public service announcement explaining several geohazards and how best to prepare for each one.</p> <p>2.1.4 Investigate/research an area of potential geohazard and suggest a sequence of actions to minimize its potential impact.</p> <p>2.1.4 Develop generalized lists of safety precautions for different locations around the globe based on tectonic crustal processes in each region.</p> <p>2.1.4 Which is <i>more likely</i> to prevent mass-movement events?  a. constructing buildings in stream drainage paths  b. clear-cutting trees from the side of a mountain  c. paving roads next to sloping hills  <b>d. contour plowing of crop areas</b></p>
<p>EEn.2.2 Understand how human influences impact the lithosphere.</p>	<p>EEn.2.2.1 Explain the consequences of human activities on the lithosphere (such as mining, deforestation, agriculture, overgrazing, urbanization, and land use) past and present.</p>	<p>2.2.1 Make maps showing the change in urbanization of the United States, their hometown, or any global city over the last 50, 100, and 200 years. Prepare a timeline or map of landcover change over time, emphasizing forest cover and/or cropland.</p> <p>2.2.1 Use data from the North Carolina Department of Environment and Natural Resources (DENR) to determine the effect of increasing population growth and development on flood events in a developing area of North Carolina.</p>

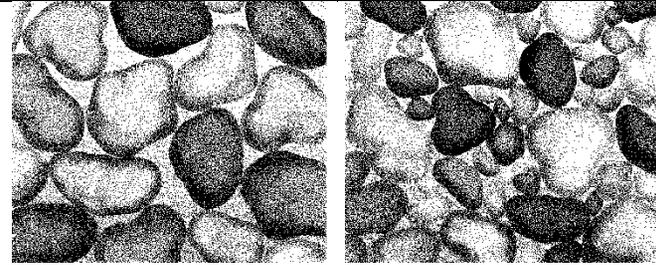
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		<p>2.2.1 Use environmental erosion regulations to prepare posters explaining how citizens can prevent or mediate soil erosion.</p> <p>2.2.1 Prepare maps showing how urbanization has reduced the amount of undisturbed land in a county.</p> <p>2.2.1 How does the replacement of large land areas with concrete and asphalt affect the land?</p> <ol style="list-style-type: none"> <li>It changes the bedrock of underlying layers of soil.</li> <li>It prevents the dynamics of the rock cycle.</li> <li>It increases the amount of groundwater in porous rock.</li> <li><b>It increases erosion of sediments by increasing runoff.</b></li> </ol>
	<p>EEn.2.2.2 Compare the various methods humans use to acquire traditional energy sources (such as peat, coal, oil, natural gas, nuclear fission, and wood).</p>	<p>2.2.2 Conduct a student debate on the pros and cons of traditional energy resources.</p> <p>2.2.2 Use internet resources to illustrate the effect of various mining methods on the environment.</p> <p>2.2.2 Why does mining of coal and other natural resources often result in environment pollution?</p> <ol style="list-style-type: none"> <li>Mining pollutes the air near streams.</li> <li>Mining produces acid precipitation near streams.</li> <li><b>Mining creates waste material which can flow into streams.</b></li> <li>Mining strips the surface of the land near streams</li> </ol> <p>2.2.2 Of the following, which energy source produces the <i>least</i> amount of solid waste?</p> <ol style="list-style-type: none"> <li>coal</li> <li><b>natural gas</b></li> <li>oil</li> <li>peat</li> </ol>

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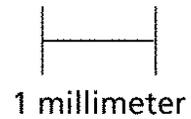
<p>EEn.2.3 Explain the structure and processes within the hydrosphere.</p>	<p>EEn.2.3.1 Explain how water is as an energy agent (currents and heat transfer).</p>	<p>2.3.1 Have students select two cities located at the same latitude, one on the coast and one inland at least 200 miles. Use data from the National Weather Service and/or the National Climatic Data Center to graph temperature every four hours for several days. From this data, infer the water’s role in temperature mitigation.</p> <p>2.3.1 Develop maps showing the circulation of major ocean currents. Explain how the Earth’s heat budget is affected by these currents.</p> <p>2.3.1 Use experimental methods to determine the effects of salinity and temperature on water currents.</p> <p>2.3.1 Prepare a PowerPoint presentation relating several new ways of harnessing tidal and wave power.</p> <p>2.3.1 How is the balance of heat energy maintained in the oceans?  a. The sun’s energy is equally distributed throughout the oceans.  b. The tides transfer heat energy across the oceans.  c. The movement of waves transfers heat energy throughout the oceans.  <b>d. Heat energy is cycled by currents between the equator and the polar regions.</b></p>
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EEn.2.3.2 Explain how ground water and surface water interact.



Sample A

Sample B



- 2.3.2 a. Describe groundwater flow through the two samples (A & B). Explain your answer.
- 2.3.2 b. Which of the two samples has the greater permeability? Why?
  
- 2.3.2 Conduct experiments to determine the general effect of reduced pore space on water flow through a column of sediments. Use experimental findings to substantiate the determination.
  
- 2.3.2 Prepare a PowerPoint presentation explaining porosity and permeability. Also in the presentation, explain their effects on movement of water underground.
  
- 2.3.2 When is the subsurface phase of the water cycle complete?
  - a. **when groundwater emerges in places where the water table interacts with the ground surface**
  - b. when precipitation produces runoff into streams above the surface
  - c. when water remains in the ground as part of the water table
  - d. when water infiltrates the ground after rain, sleet, or snow accumulate

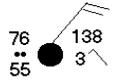
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		<p>2.3.2 In what type of soil would seepage of groundwater into streams occur the slowest?</p> <ul style="list-style-type: none"> <li>a. fine sand</li> <li>b. gravel</li> <li><b>c. fine clay</b></li> <li>d. silt</li> </ul>
EEn.2.4 Evaluate how humans use water.	EEn.2.4.1 Evaluate human influences on freshwater availability.	<p>2.4.1 Complete a water audit of their home water use, analyze their findings, and determine at least one way in which they could change their water use to conserve water in their daily life.</p> <p>2.4.1 Interview a hydrologist to learn how pump-down cones develop around wells and how over pumping can affect the water supply in an area.</p> <p>2.4.1 Compare water use for several types of irrigation. Use graphs as a part of the comparison.</p> <p>2.4.1 How would several wells in a given area affect the balance of groundwater recharge and discharge?</p> <ul style="list-style-type: none"> <li>a. The wells would provide dissolved oxygen.</li> <li>b. The wells would increase the water table level by adding water from runoff.</li> <li><b>c. The wells would deplete the groundwater which is usually supplied by percolation from rain.</b></li> <li>d. The wells would provide storage areas for groundwater to maintain the water level.</li> </ul>
	EEn.2.4.2 Evaluate human influences on water quality in North Carolina’s river basins, wetlands and tidal environments.	<p>2.4.2 Test pH, temperature, dissolved oxygen, nitrites, and phosphates from a local water source. Discuss how land use in the watershed may or may not have impacted water quality.</p>

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		<p>2.4.2 Research local non-point source pollution problems and develop lists of remedial actions that can be taken to address the problems.</p> <p>2.4.2 When a sewer pipe breaks near a stream which would <i>most likely</i> occur?</p> <ul style="list-style-type: none"> <li>a. increase in salinity</li> <li>b. decrease in dissolved nitrogen</li> <li><b>c. decrease in dissolved oxygen</b></li> <li>d. increase in pesticides</li> </ul>
EEn.2.5 Understand the structure of and processes within our atmosphere.	EEn.2.5.1 Summarize the structure and composition of our atmosphere.	<p>2.5.1 Make a diorama of the layers of the atmosphere using a shoebox. Properly label, order, and summarize the characteristics of each layer.</p> <p>2.5.1 Why do planes fly in the stratosphere, the second-lowest layer of the atmosphere?</p> <ul style="list-style-type: none"> <li><b>a. to avoid storms and other weather events</b></li> <li>b. to receive better radio communication</li> <li>c. to fly at supersonic speeds without air resistance</li> <li>d. to avoid changes in air pressure</li> </ul> <p>2.5.1. The earth’s atmosphere is mainly composed of which three gases?</p> <ul style="list-style-type: none"> <li><b>a. argon, nitrogen and oxygen</b></li> <li>b. carbon dioxide, helium and nitrogen</li> <li>c. argon, methane and oxygen</li> <li>d. helium, oxygen and radon</li> </ul>
	EEn.2.5.2 Explain the formation of typical air masses and the weather systems that result from air mass interactions.	<p>2.5.2 How does a cold front form?</p> <ul style="list-style-type: none"> <li>a. Warm air advances and replaces cold air.</li> <li><b>b. Cold air advances, forcing warm air to rise.</b></li> <li>c. Warm and cold air masses meet and mix.</li> <li>d. Warm and cold air masses have no relative advancement.</li> </ul>
	EEn.2.5.3 Explain how cyclonic storms form based on the interaction of air masses.	<p>2.5.3 Describe the life cycle of a “typical” cyclone. Make a visual to illustrate.</p> <p>2.5.3 Follow weather events across the North American continent and predict weather in their area for the following day.</p>

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		<p>2.5.3 How are hurricanes and tornadoes related to air masses?</p> <ul style="list-style-type: none"> <li>a. They form within air masses.</li> <li><b>b. They form where air masses meet.</b></li> <li>c. They form where air pressure is the same.</li> <li>d. They form where air temperatures are the same</li> </ul>
	<p>EEn.2.5.4 Predict the weather using available weather maps and data (including surface, upper atmospheric winds, and satellite imagery).</p>	<p>2.5.4 Use daily weather data to create local station models. Use these models to predict weather over varying spans of time.</p> <p>2.5.4 Which direction is the wind blowing at this weather station?</p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> <li><b>a. northeast</b></li> <li>b. northwest</li> <li>c. southeast</li> <li>d. southwest</li> </ul> <p>2.5.4 On an August afternoon in North Carolina, the barometric pressure is 29.92 inches and falling. What weather condition is likely to happen?</p> <ul style="list-style-type: none"> <li>a. clearing skies and cooler temperatures</li> <li>b. continued fair weather</li> <li><b>c. an imminent storm</b></li> <li>d. conditions will slowly improve</li> </ul>
	<p>EEn.2.5.5 Explain how human activities affect air quality.</p>	<p>2.5.5 Investigate the formation of acid rain by blowing carbon dioxide into distilled water and test its effects on limestone. Explain the results of the investigation.</p> <p>2.5.5 Use EPA data from the World Wide Web to graph automobile emissions in a variety of comparisons. Compare this to acid rain data over the same time periods.</p> <p>2.5.5 Use sampling techniques to analyze particulate air pollution along a</p>

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		<p>road near the school. Explain the findings.</p> <p>2.5.5 Where would the highest amounts of acid rain <i>most likely</i> be found?</p> <ol style="list-style-type: none"> <li>over the ocean</li> <li>in the forest</li> <li><b>in urban areas</b></li> <li>in the mountains</li> </ol>
EEn.2.6 Analyze patterns of global climate change over time.	EEn.2.6.1 Differentiate between weather and climate.	<p>2.6.1 Use precipitation, average high temperature, and average low temperature data for an extended period of time (at least 30 years) as a basis to describe weather on a certain number of days and to describe the climate of the location. Use the data to distinguish between weather and climate.</p> <p>2.6.1 What is the major difference between weather and climate?</p> <ol style="list-style-type: none"> <li>air temperature</li> <li>air pressure</li> <li>humidity</li> <li><b>time</b></li> </ol> <p>2.6.1 Which of the following is an example of climate?</p> <ol style="list-style-type: none"> <li>the current temperature in Pinehurst, NC</li> <li>the relative humidity in Raleigh, NC</li> <li>the average current temperature in a region</li> <li><b>the average temperature in Raleigh, NC over the past 30 years</b></li> </ol>
	EEn.2.6.2 Explain changes in global climate due to natural processes.	<p>2.6.2 Determine the relationship between sea temperature, wind direction and convection along the equatorial Pacific during El Nino and La Nina. (example activity is found at <a href="http://www.fsl.noaa.gov/outreach/education/samii/SAMII_Activity5.html">http://www.fsl.noaa.gov/outreach/education/samii/SAMII_Activity5.html</a>) Relate this relationship to global climate change.</p>
	EEn.2.6.3 Analyze the impacts that human activities have on global climate change (such as burning hydrocarbons, greenhouse effect, and deforestation).	<p>2.6.3 Simulate the greenhouse effect by using two beakers, covering one with plastic wrap. Place thermometers in both beakers and heat both with a light source. Take temperatures at regular time increments and then create a line graph to show results. Write a letter to the editor of a local news outlet to make the connection between their results and</p>

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		<p>what is happening on a global scale.</p> <p>2.6.3 Graph the measurements of carbon dioxide levels in the atmosphere since 1958 using data from Mauna Loa and other sources. How can this data be used to support or refute various beliefs about human activity impacting global climate?</p>
	EEn.2.6.4 Attribute changes in Earth systems to global climate change (temperature change, changes in pH of ocean, sea level changes, etc.).	<p>2.6.4 Use web sites to compare changes in shore lines given selected rises in mean sea level.</p> <p>2.6.4 Use available data concerning the NC barrier islands to project the effect of sea level rise, nor'easters and hurricanes on the islands and their inhabitants.</p>
EEn.2.7 Explain how the lithosphere, hydrosphere, and atmosphere individually and collectively affect the biosphere.	EEn.2.7.1 Explain how abiotic and biotic factors interact to create the various biomes in North Carolina.	<p>2.7.1 Explain the physical factors and climate and other physical factors that produce different plant assemblages in the following areas of NC: SE Coastal Plain, NE Coastal Plain, Upper Coastal Plain, Sandhills, Piedmont, Foothills, Blue Ridge, and Tops of the Highest Mountains.</p> <p>2.7.1 Explain the physical factors which cause different plant assemblages to flourish on the North- and South-facing slopes of stream valleys in the piedmont and the mountains.</p> <p>2.7.1 Explain why different crops are grown in different areas of NC: for example, peanuts in the Coastal Plain or peaches in the Sandhills.</p> <p>2.7.1 In small groups, make a one-minute public service announcement about the biodiversity in an assigned biome. It should include the biotic and abiotic factors that shape the unique populations of that biome.</p> <p>2.7.1 Many of the biomes that exist on Earth can be found in the western parts of North Carolina. What is the primary reason for the existence of such a wide range of biomes in this area?</p> <ol style="list-style-type: none"> <li>a. the rivers and lakes in the mountain areas</li> <li><b>b. the wide range of altitudes of the mountains</b></li> <li>c. they types of rocks that make up the mountains</li> <li>d. the wind and water erosion of the mountains</li> </ol>

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	<p>EEn.2.7.2 Explain why biodiversity is important to the biosphere.</p>	<p>2.7.2 Make an annotated “Top Five” list of reasons biodiversity is essential. Make a creative display to convey this information.</p> <p>2.7.2 How is biodiversity essential to the environment?</p> <ul style="list-style-type: none"> <li>a. Biodiversity decreases the chance that at least some living things will survive in the face of large changes in the environment.</li> <li>b. Biodiversity decreases the stability of the ecosystem.</li> <li>c. Biodiversity adds to the aesthetical value of the environment and reduces the amount of genetic material in the environment.</li> <li><b>d. Biodiversity adds to the aesthetical value of the environment and increases the amount of genetic material in the environment.</b></li> </ul>
	<p>EEn.2.7.3 Explain how human activities impact the biosphere.</p>	<p>2.7.3 Research land use of the students’ local area over the past 25-30 years. Create land use maps to explain how land use has changed over time and the impacts that those changes have on animals and plants living in the area.</p> <p>2.7.3 Which human activity would be <i>most</i> destructive to the biodiversity of the biosphere?</p> <ul style="list-style-type: none"> <li>a. the burning of wood and coal in rural areas</li> <li>b. the release of species of freshwater trout in lakes</li> <li><b>c. the removal of plants from the food webs they support</b></li> <li>d. the removal of erosion barriers from forest boundaries</li> </ul>
<p>EEn.2.8 Evaluate human behaviors in terms of how likely they are to ensure the ability to live sustainably on Earth.</p>	<p>EEn.2.8.1 Evaluate alternative energy technologies for use in North Carolina.</p>	<p>2.8.1 Conduct an energy audit at home and determine which alternative energy technology would be the most cost-effective method to supply daily energy needs.</p> <p>2.8.1 Develop a 5-minute presentation that presents the alternative energy technology best suited for a hog farm that contains approximately 150,000 hogs in eastern NC. Support this decision of “best” with research and present this evidence in written form.</p> <p>2.8.1 Compare energy requirements for home heat pumps using air-to-air and water-to-air technology. Prepare a print advertisement to “sell” the technology determined to be the most viable.</p>

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		<p>2.8.1 Compare energy use for continuous-service electric and gas hot water heaters with on-demand hot water heaters. Write a song to present this data (Use the tune of a recognizable children’s song).</p> <p>2.8.1 Which alternative energy technology could take advantage of land and sea breezes in coastal North Carolina?</p> <ol style="list-style-type: none"> <li>biofuels production</li> <li><b>wind farms</b></li> <li>solar energy panels</li> <li>nuclear fusion</li> </ol>
	<p>EEn.2.8.2 Critique conventional and sustainable agriculture and aquaculture practices in terms of their environmental impacts.</p>	<p>2.8.2 Evaluate the costs and benefits to the consumer and to the environment of purchasing sustainably- or conventionally-produced food. Which one would students prefer to purchase and why? Compare the miles traveled, days from harvest, retail price, quality (appearance, variety, and flavor), and amount of handling (number of steps from field to eater) for an item of produce procured from a local supermarket and a local farmers’ market.</p> <p>2.8.2 Why should the farming industry adopt sustainable agriculture practices?</p> <ol style="list-style-type: none"> <li>to increase the use of irrigation systems</li> <li>to increase the number of non-point sources of water pollution</li> <li>to increase the amount of erosion and deposition</li> <li><b>to reduce the environmental degradation and economic losses</b></li> </ol>
	<p>EEn.2.8.3 Explain the effects of uncontrolled population growth on the Earth’s resources.</p>	<p>2.8.3 Prepare presentations illustrating the effect of continued population growth in NC, the US, and the world.</p> <p>2.8.3 Which change would <i>most likely</i> occur as a result of rapid increases in the global population?</p> <ol style="list-style-type: none"> <li>The price of labor to harvest raw food supplies would decrease.</li> <li>The price of transporting food would cause lowering of food prices.</li> <li><b>There would be a high demand for limited natural resources.</b></li> <li>The present global management of natural resources would remain the same.</li> </ol>

Earth/Environmental Assessment Examples

	<p>EEn.2.8.4 Evaluate the concept of “reduce, reuse, recycle” in terms of impact on natural resources.</p>	<p>2.8.4 Research the life cycle of an object used in daily life, from raw materials to end-of-life disposal. Then propose a redesign of the object to maximize potential for recycling at the end of that object’s useful life. What impact would this change have on the Earth in one year? Five years? Fifty years?</p> <p>2.8.4 Why would citizens be advised to recycle plastic products?</p> <ul style="list-style-type: none"> <li>a. <b>because the products are not biodegradable and would therefore accumulate</b></li> <li>b. because this would increase the consumption of petroleum products</li> <li>c. because this would decrease the amount of green industry jobs</li> <li>d. because the products can be made into inexpensive public art</li> </ul>
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