# MAPPING GRADE 3 SCIENCE INSTRUCTION

**Concept:** Energy Sources
**PWC Strand:** Environmental Science

**CMS Unit Test:** *Using and Conserving Natural Resources*
**Reporting Category:** *Earth/Space Systems and Cycles*

**PWC Objective: 3.3.1**

**T**he student will investigate and understand different sources of energy. Key concepts include:

- the sun's ability to produce light and heat energy **(SOL 3.11a)**
- natural sources of energy including sunlight, water, and wind **(SOL 3.11b)**
- types of fossil fuels (coal, oil, natural gas) and wood **(SOL 3.11c)**
- renewable and nonrenewable energy sources **(SOL 3.11d)**

| **What Students Should Know** (Critical Attributes) | **What Students Should Be Able To Do** (Essential Skills) |
|---|---|
| **Essential Questions:**<br>• What is the Earth's main source of heat and light?<br>• What are some important natural resources we use to make electricity?<br>• What is the difference between a renewable resource and a nonrenewable resource?<br>• How do fossil fuels affect our lives?<br>• How does electricity and nuclear power affect our lives? | |
| **Critical Attributes**<br>3.11a The sun is the source of almost all heat and light energy on Earth. The sun is directly the source of light and heat energy. We can use the sun's natural energy in many ways. | • Explain that the sun is the major source of energy for the Earth.<br>• Design a basic investigation to determine the effects of sunlight on warming various objects and materials, including water. |
| 3.11b All living things and natural processes on Earth need energy. There are different sources of energy available to us on the earth. Some are sources that occur naturally, like sunlight, wind, and water. Others are types of energy we generate, like electricity, from the force of flowing water or air (wind). | |

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| What Students Should Know<br>(Critical Attributes) | What Students Should Be Able To Do<br>(Essential Skills) |
|---|---|
| 3.11c Fossil fuels are a natural source of energy that were formed from the remains of plants and animals that lived and died long ago. Over time, these remains were changed into energy-rich fuels. Oil (petroleum), coal, natural gas and gasoline are fossil fuels. Fossil fuels are obtained from under the ground.<br><br>3.11c Wood comes from trees. It has many important uses including that of being a fuel.<br><br>3.11c A renewable resource is one that can be replenished in our life times. Sun, wind, and water are renewable resources. Since the supply of water is set and relies on renewal through the water cycle, we have to be careful how much we use at a time.<br><br>3.11d Nonrenewable resources are those that take longer than a human lifetime to replace. Fossil fuels are an example of a nonrenewable resource; once they are used up they can't be replaced. | • Describe how solar energy, wind, and moving water can be used to produce electricity.<br><br>• Describe how fossil fuels are used as an energy source.<br><br>• Identify sources of energy and their uses.<br><br>• Compare and contrast renewable and nonrenewable energy sources.<br><br>• Analyze the advantages and disadvantages of using different naturally occurring energy sources. |

# MAPPING GRADE 3 SCIENCE INSTRUCTION

**Concept:** Human and Natural Influences on Organisms
**PWC Strand:** Environmental Science

**CMS Unit Test:** *Organisms Adaptations and Interactions*
**Reporting Category:** *Life Processes & Living Systems*

**PWC Objective: 3.3.2**

The student will investigate and understand that natural events and human influences can affect the survival of a species. Key concepts include:

- the interdependency of plants and animals **(SOL 3.10a)**
- human effects on the quality of air, soil, water, and habitat **(SOL 3.10b)**
- effects of fire, flood, disease, and erosion on animals **(SOL 3.10c)**
- conservation and resource renewal **(SOL 3.10d)**

| **What Students Should Know** (Critical Attributes) | **What Students Should Be Able To Do** (Essential Skills) |
|---|---|
| **Essential Questions:**<br>• How do humans affect the quality of air, water, and habitat?<br>• How do fire, flood, disease erosion, earthquake, and volcanic eruption affect organisms?<br>• What are some ways we can protect organisms in our environment and their habitats?<br><br>**Critical Attributes:**<br>There are many influences on how well organisms can survive in their environment. Humans cause some influences, and some happen naturally. These natural events and human influences can have good and bad consequences.<br><br>3.10a Every living thing depends on every other living thing to survive. This is called interdependency.<br><br>3.10b Human actions can affect the survival of plants and animals. People change habitats when they build roads, shopping centers, and homes. This can promote soil erosion and deplete the amount of space plants and animals have to grow and can possibly endanger them, especially if no areas are designated as protected areas and parks. | • Explain how living things in an area are dependent on each other. |

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| **What Students Should Know**<br>(Critical Attributes) | **What Students Should Be Able To Do**<br>(Essential Skills) |
|---|---|
| 3.10b People destroy habitats and harm organisms by polluting the air, land, and water with harmful chemicals and wastes. Water can become polluted and poisoned for water-dwelling organisms when oil, fertilizers, and factory wastes are dumped or washed into it. Automobiles, incinerators, coal-burning power plants, and factories send harmful gases into the air that makes the air unhealthy. Litter is pollution.<br><br>3.10c Natural "disasters" (fire, flood, drought, disease, erosion, earthquakes, and volcanic eruptions) can have both good and bad effects on organisms. Natural soil erosion (the loss of topsoil by running water or wind) leaves less rich soil behind for crops and other plants to grow in. Some natural disasters are so huge that an ecosystem cannot recover from them. These are called catastrophic disasters. Some events can have positive effects; for example, certain seeds will germinate only after being exposed to the extreme heat of a forest fire.<br><br>3.10d There are different ways we can protect animals, plants, and their habitats. We can make and enforce laws against hunting, polluting, and littering; and not allow the construction of roads and buildings in protected areas.<br><br>3.10d We can conserve (carefully use and preserve) materials by being careful how they are used and by not wasting them. We can carefully oversee and protect habitats to keep them suitable for organisms to live there.<br><br>3.10d Resource renewal is a conservation practice. An example of resource renewal is protecting endangered plants by saving their seeds, growing the seeds indoors, and later putting the plants in their natural habitats.<br><br>3.10d Habitat management is a conservation practice that protects the habitats of plants and animals, such as setting up parks or areas where no one is allowed to build houses, hunt, or collect plants and animals.<br><br>3.10d Species monitoring is a conservation practice where a record of the number of a certain species in a particular area is tracked over time, such as counting the number of eagles nesting in an area over time. | • Compare and contrast human influences on the quality of air, water, and habitats.<br><br>• Analyze the effects of fire, flood, disease, earthquakes, and volcanic eruption on organisms and habitat.<br><br>• Describe how conservation practices can affect the survival of a species.<br><br>• Describe a conservation practice in the local community. |