



Gulfport School District
Science Instructional Strategies



Check Grade Level K ___ 1 ___ 2 ___ 3 ___ 4 ___ 5 X 6 ___ 7 ___ 8 ___ 9 ___ 10 ___ 11 ___ 12 ___

Competency: 6 Investigate the structure of the Earth.

Objective(s): a Investigate the structure of the atmosphere (gas-air), hydrosphere (liquid-water), and lithosphere (solid-land).

Vocabulary: hydrosphere, lithosphere, atmosphere

Teaching Strategy(ies):

Websites: www.kidsgeo.com/geography-for-kids/0046-layers-of-the-atmosphere.php

hangman of the atmosphere- <http://education.jlab.org/vocabhangman>

multiply atmospheric arcade – <http://calipsooutreach.hamptonu.edu/arcade.html>

1. Students will make a flip book which includes the following:
2. Place your name on the front cover.
3. Title for your book, spelled correctly.
4. Label the three layers of the atmosphere.
5. Write three facts or characteristics about each layer, in a complete sentence.
6. Create a colored, relevant picture for each layer.

Materials: flip book with sections

Competency: 6 Investigate the structure of the Earth.

Objective(s): a Investigate the structure of the atmosphere (gas-air), hydrosphere (liquid-water), and lithosphere (solid-land).

Vocabulary: crust, continental crust, oceanic crust, mantle, magma, hydrothermal vent, lithosphere, tectonic plate, asthenosphere, core, atmosphere, Pangaea

Teaching Strategy(ies):

1. Students will construct a Pangaea puzzle.
2. Students will enlarge a copy of the Pangaea puzzle.
3. Students arrange puzzle pieces as they might have looked at various times in the Earth's geological past.
4. Students will discuss the Pangaea Theory.

Materials: Pangaea puzzle (found in JBHM 5th grade teacher's binder), scissors, glue, white paper

Competency: 6 Investigate the structure of the Earth.

Objective(s): a Investigate the structure of the atmosphere (gas-air), hydrosphere (liquid-water), and lithosphere (solid-land).

Vocabulary: crust, mantle, inner core, outer core

Teaching Strategy(ies):

1. The students will build a model of the Earth.
2. The student will cut the model to illustrate the layers of the Earth.
3. The students will label each layer with facts and description of each layer.

Materials: Styrofoam ball, toothpicks, construction paper, markers



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Check Grade Level K___ 1___ 2___ 3___ 4___ 5 X 6___ 7___ 8___ 9___ 10___ 11___ 12___

Competency: 6 Investigate the structure of the Earth.

Objective(s): b Examine how organisms affect the composition of the Earth and atmosphere.

Vocabulary: overpopulation, deforestation, ozone, acid rain, smog

Teaching Strategy(ies):

Websites: school.discoveryeducation.com/lessonplans
www.woodlands-junior.kent.sch.uk/time/index.html

1. Students read the story The Lorax by Dr. Seuss.
2. Students discuss how community would be affected if there were no more trees.
3. Extension
 - a) Adopt-a-Tree – Students can adopt a tree in the school area.
 - b) Plant a Tree – Students can plant a tree in the school area.
 - c) Recycled Paper

Materials: The Lorax by Dr. Seuss

Competency: 6 Investigate the structure of the Earth.

Objective(s): b Examine how organisms affect the composition of the Earth and atmosphere.

Vocabulary: overpopulation, deforestation, ozone, acid rain, smog

Teaching Strategy(ies):

Overpopulation

Website: www.microsoft.com/education/lessonplans/populationdensity.msp#EFH
www.worldbank.org/depweb/english/modules/social/gr/print.html

1. The students will research the effects of overpopulation on the environment.
2. Students will discuss other ways that humans damage the Earth (pollution – land, air, and water).
3. Students predict the population density of countries around the world and evaluate predictions.

Materials: Activity Explore Population



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Check Grade Level K ___ 1 ___ 2 ___ 3 ___ 4 ___ 5 X 6 ___ 7 ___ 8 ___ 9 ___ 10 ___ 11 ___ 12 ___

Competency: 6 Investigate the structure of the Earth.

Objective(s): c Analyze processes that cause changes on Earth.

Vocabulary: erosion, deposition, weathering, glacier, moraine, volcano, plate tectonics, Pangaea Theory

Teaching Strategy(ies):

1. Introduce the term erosion. Select some objects in the classroom that students can pick up, carry, and deposit elsewhere to show change. Some suggested items are chairs, books, plants, etc.
2. List the agents of erosion (wind, water, ice, and human) on the board. List places where students have seen erosion (steep hillsides, seashore, river bottomland, ice-covered land, bare ground where people have worn a path).
3. Find areas on the school ground where erosion can be shown – gullies formed by running water or hard packed paths formed by human feet, piles of dust in the corners of buildings.
4. Use leveled resource books for research and discussion.

Materials: United Streaming video for background – www.brainpop.com

Competency: 6 Investigate the structure of the Earth.

Objective(s): c Analyze processes that cause changes on Earth.

Vocabulary: erosion, deposition, weathering, glacier, moraine, volcano, plate tectonics, Pangaea Theory

Teaching Strategy(ies):

1. Students will discuss glaciers and how they change the land.
2. Student will complete the activity to demonstrate how glaciers change the land.
3. Students will construct a list of what causes changes to our planet's structure.

Materials: paper, pencils, newsprint, markers, ice cube tray, water, sand, two plastic cups/group, teaspoon



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Competency: 6 Investigate the structure of the Earth.

Objective: c Analyze processes that cause changes on Earth.

Vocabulary: compressed, tectonic plate, constructive and destructive continental plates, Pangaea Theory

Teaching Strategy(ies):

1. Prior to beginning the lesson, pour about 3 cm of water into a large baking dish. Set the dish on an electric hot plate where all students can see. Do not turn it on yet.
2. Show the students on a map or a globe the continents of Africa and South America. If necessary, point out that the west coast of Africa and the east coast of South America are almost a perfect match, as if the two continents could fit together like two pieces in a giant jigsaw puzzle.
3. Explain that in the early twentieth century, a German scientist named Alfred Wegener noticed this as well, which led him to propose a theory called continental drift. This theory is now called the plate tectonic theory.
4. Hold up a grapefruit and tell the class that the grapefruit will represent the Earth. Slowly peel the skin off the grapefruit, holding up each piece. Explain that each section of the skin is like a piece of the Earth's outer layer. Ask the students what the name of the outer layer of the Earth is. [crust]
5. Explain that the crust of the Earth is made of more than 20 rigid sections called tectonic plates. These plates rest on an underlying layer called the mantle, just like the skin of the fruit sits on the fleshy part. Explain that the mantle is hot and is made up of rock that can flow slowly. When the mantle flows, the plates above go for a ride.
6. Direct the students' attention to the hot plate with the baking dish with water. Explain that this simple model will demonstrate how this process works. Turn on the hot plate to low; making sure the heat is concentrated at the center of the baking dish. Ask the students what they think will happen at the center of the dish. Then ask what happens to fluids when they get hot.
7. Explain that as the water warms, it becomes less dense and rises at the center. Ask the students where they think the water will go after it rises.[It should spread out to the sides.] Ask the students to predict what will happen if the two blocks are placed in the water. Place the two blocks in the water and check students' predictions. [The blocks should begin drifting in opposite directions.]
8. Ask the students to look at the map again and identify what the two blocks in the baking dish represent.
9. Have the students record their observations in their science journal.

Materials: 9x12-inch metal or glass baking dish, water, electric hot plate, grapefruit, world map or globe

Additional websites for science: www.oxbow.concord.k12.in.us/fourthgrade_files/fourthgrade.html#science



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Competency: 6 Investigate the structure of the Earth.

Objective: c Analyze processes that cause changes on Earth.

Vocabulary: geological features, external forces, weathering (chemical or mechanical), erosion, deposition

Teaching Strategy(ies):

1. Introduce the term *erosion* by doing some class role playing. Tell the students they are going to change the room a bit. Inform them that the student who will be doing the change will be called *Agent Erosion* and will wear the safari hat. Tell them that the job of Agent Erosion is to pick up, carry, and deposit (put things down) items from around the room. Inform them that the first few times, you will be the director and will tell Agent Erosion what to pick up, where to carry it, and where to deposit it.
2. Choose a student to be Agent Erosion. Direct him/her to pick up, carry, and deposit some items from around the room. Have different students repeat the procedure. Emphasize the process and what changes resulted in the room. Select a student to play director and continue to play the role.
3. Take the students outside to look at a doormat. Ask them what they see on or under the mat. Ask them how the dirt (grass, sand, etc.) got there. [This is a case of pick up, carry, and deposit. The soil, etc. was picked up on their shoes, carried to the area, and deposited when they scraped their feet. They (the students) were agents of erosion.]
4. Tell the students that in nature the processes of pick up, carry, and deposit change the way Earth looks. Ask them what they think does the picking up and carrying.
5. If it is possible, find areas on the school grounds where erosion can be shown – gullies formed by running water or hard-packed paths formed by human feet, piles of dust in the corners of buildings. Ask the students how many of them have experienced having dirt or sand blown in their faces. Ask them which agent of erosion is picking up and carrying that dirt and sand.
6. Back in the classroom, list the agents of erosion [wind, ice, water] on the board. Also list places where the students have seen erosion. [steep hillsides, seashore, river-bottom land, ice-covered land, bare ground where people have worn a path]
7. Ask where the sand and rock go when they are eroded.
8. Tell the students that they will be completing activities on the three types of erosion during the next few class periods.
9. Have the students write about their experiences in their science journal.

Materials: Safari hat, various objects in the room, science journal

Additional websites for science: www.oxbow.concord.k12.in.us/fourthgrade_files/fourthgrade.html#science



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Competency: 6 Investigate the structure of the Earth.

Objective(s): d Explore fossils as indicators of how life and environmental conditions have changed.

Vocabulary: fossil, paleontologist, body fossil, trace fossil, petrification, cast, mold, relative age, absolute age, index fossil

Teaching Strategy(ies):

Website: www.enchantedlearning.com/subjects/dinosaurs/dinofossils/Fossilhow.html

1. Students are introduced to layers of earth, rock formation, types of rocks, and fossil formation.
2. Students will label and match fossils to rock types.
3. Students will identify two main types of fossils.
4. Students will identify the main goals of geology.

Materials: text

Competency: 6 Investigate the structure of the Earth.

Objective(s): d Explore fossils as indicators of how life and environmental conditions have changed.

Vocabulary: fossil, paleontologist, body fossil, trace fossil, petrification, cast, mold, relative age, absolute age, index fossil

Teaching Strategy(ies):

1. Students will make their own fossilized footprint. Fossilized evidence is one method scientists use to discover what types of plants and animals lived thousands of years ago.
2. Extension
 - a) Students search for fossilize footprints.
 - b) Students search the school grounds and look for fossilize footprints.

Materials: 1 4-pint milk for juice carton, bucket of sand, small cup, large dup, water, plaster scissors



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Check Grade Level K___ 1___ 2___ 3___ 4___ 5_X 6___ 7___ 8___ 9___ 10___ 11___ 12___

Competency: 7 Investigate the Earth as a part of the solar system.

Objective(s): a Explore how the Earth motion defines the day and the year and influences the phases of the moon and eclipses.

Vocabulary: axis, rotation, revolution

Teaching Strategy(ies):

MS MCT Coach – Lesson 20

1. Students identify positional time to determine night and day.
2. Students identify Earth's movement (revolution) for time (year).

Materials: text

Competency: 7 Investigate the Earth as a part of the solar system.

Objective(s): a Explore how the Earth motion defines the day and the year and influences the phases of the moon and eclipses.

Vocabulary: phase, waxing, waning, reflect, eclipse, solar eclipse, lunar eclipse

Teaching Strategy(ies):

Websites: www.moonconnection.com/moon_phases.phtml

1. Students will identify the different shapes of the moon (phases).
2. Students will explain the reasons for the different phases.
3. Students model solar and lunar eclipses.

Materials: text

Competency: 7 Investigate the Earth as a part of the solar system.

Objective(s): a Explore how the Earth motion defines the day and the year and influences the phases of the Moon and eclipses.

Vocabulary: phase, waxing, waning, reflect, eclipse, solar eclipse, lunar eclipse

Teaching Strategy(ies):

1. Different Moons
 - a) Students will view the different phases of the Moon.
2. Phases of the Moon
 - a) Students will determine why the Moon appears in different phases.
3. Moon Gazing
 - a) Students will observe the phases of the Moon.
4. www.explorellearning.com Gizmo activity

Materials: shoe box, black paint, scissors, modeling clay or tape, ping pong ball, flashlight, Gizmo



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Competency: 7 Investigate the Earth as a part of the solar system.

Objective(s): b Explain how gravity influences the action of the tides.

Vocabulary: gravity, mass, tides

Teaching Strategy(ies):

MS MCT Coach – Lesson 23

1. Students identify force of gravity.
2. Students will determine how mass and distance affect gravity.
3. Students will identify cause and effect of gravity on tides.

Materials: text

Competency: 7 Investigate the Earth as a part of the solar system.

Objective(s): b Explain how gravity influences the action of the tides.

Vocabulary: gravity, mass, tides

Teaching Strategy(ies):

Websites: www.globallearning-sailnewport.org/index.php?option=com_content&view=article&id7

Students will discover the impact of geography and the lunar cycle on the tidal cycle.

Materials: text

Competency: 7 Investigate the Earth as a part of the solar system.

Objective(s): b Explain how gravity influences the action of the tides.

Vocabulary: gravity, mass, tides

Teaching Strategy(ies):

Website: www.tides.info

Wwwlsfgate.com/getoutside/1996/jun/tides.html

kids.msfc.nasa.gov/News/2000/News-VernalEquinox.asp

www.dibonsmith.com/stars.htm

www.brainpop.com/science/weather/seasons/

Materials: websites, United Streaming – The Reasons for the Seasons, Seasons of the Year



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Competency: 7 Investigate the Earth as a part of the solar system.

Objective(s): c Explain and illustrate how the tilt of the Earth axis and Earth revolution around the Sun create the seasons.

Vocabulary: season, Northern Hemisphere, Southern Hemisphere

Teaching Strategy(ies):

MS MCT Coach – Lesson 24

Students identify causes of the four seasons.

Materials: text

Competency: 7 Investigate the Earth as a part of the solar system.

Objective(s): c Explain and illustrate how the tilt of the Earth axis and Earth revolution around the Sun create the seasons.

Vocabulary: season, Northern Hemisphere, Southern Hemisphere

Teaching Strategy(ies):

Websites: www.woodlands-junior.kent.sch.uk/time/index.html

Students will discover the three reasons why we have seasons- tilt, revolution, North Pole points in the same direction.

Materials: text and website

Competency: 7 Investigate the Earth as a part of the solar system.

Objective(s): c Explain and illustrate how the tilt of the Earth axis and Earth revolution around the Sun create the seasons.

Vocabulary: season, Northern Hemisphere, Southern Hemisphere

Teaching Strategy(ies):

Students will imitate how the Earth spins on its axis. An object that is spinning rotates around a line.

Materials: 2 pins, new coin