



Gulfport School District
Science Instructional Strategies



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

Competency: 4 Develop an understanding of the properties of Earth materials, objects in the sky, and changes in Earth and sky.

Objective: a Classify sedimentary, metamorphic, and igneous rocks. (DOK2)

Vocabulary: classify, sedimentary, metamorphic, igneous

Teaching Strategy(ies):

1. Complete a Thinking Map.
2. Teacher will discuss physical attributes.
3. Students will research, identify characteristics.
4. Teacher will create discussion questions.
5. Students will create a
 - a. chart,
 - b. book about research completed,
 - c. PowerPoint/slideshow.

Materials: assortment/collection of rocks

Additional websites for science: www.woodlands-junior.kentsch.wk/time/index.htm/
www.engineeringinteract.org/resources/astroadventure/flash/concepts.html
www.oxbow.concord.k12.in.us/fourthgrade_files/fourthgrade.html#science
www.kennedy.dubuque.k12.ia.us/technologypages/science2007.html



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Competency: 4 Develop an understanding of the properties of Earth materials, objects in the sky, and changes in Earth and sky.

Objective: b Compare and contrast Earth's geological features and the changes caused by external forces. (DOK 2)

- Bodies of water, beaches, ocean ridges, continental shelves, plateaus, faults, canyons, sand dunes, and ice caps
- External forces including heat, wind, and water
- Movement of continental plates

Vocabulary: bodies of water, beaches, ocean ridges

Teaching Strategy(ies):

1. Teacher will place topics: bodies of water, beaches, ocean ridges, continental shelves, plateaus, faults, canyons, sand dunes, ice caps on a tree map. (large-board size)
2. Students will research a topic, place information on a post-it, and place it under the correct topic on tree map.
3. With a partner, students will choose a topic and write a paragraph using the information on the tree map.
4. Collect paragraphs for a class book.

Materials: topics, post-its, paper, pencil



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- External forces including heat, wind, and water
- Movement of continental plates

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
www.kennedy.dubuque.k12.ia.us/technologypages/science2007.html



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Competency: 4 Develop an understanding of the properties of Earth materials, objects in the sky, and changes in Earth and sky.

Objective: b Compare and contrast Earth's geological features and the changes caused by external forces. (DOK2)

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

Teaching Strategy(ies):

1. Tell the students they are going to make a model of a rock so that they can see what happens to rocks as water freezes.
2. Give each student or group a water balloon.
3. Using either the premixed salt/clay or Plaster of Paris tell the students to completely cover their balloons to make them resemble rocks. Make certain the covering is not excessively thick as this prolongs the drying time.

Recipe for salt/flour clay

1 cup flour
½ cup salt
⅓+ cup water (add water until clay is dough-like)
Mix ingredients together. Knead until smooth.

4. Allow the rock models to dry thoroughly.
5. Ask students how their model rocks are like real rocks and how they are different.
6. Once the model rocks are dry, place them and the brick into the freezer.
7. Have the students predict whether their model rock will break and record their prediction in their science journal. Also create a graph on the board with their predictions using sticky notes. Each student writes their name on the note and yes or no depending on whether or not they think their rock will break. The notes are then placed on the board creating a bar graph.
8. The next day check the rocks and have each student record in their journal whether or not their rock broke and why they think that happened. Give them a different colored sticky note the same size as the one yesterday to record yes or no on and their name and place it on the board to create a bar graph for the actual freezing results.
9. Have students draw a picture in their science journals of what happens to rocks when water seeps into the cracks and freezes.

Materials: For the class: bucket of water, unglazed brick; For each student: small water balloon, ½ cup of salt or flour clay or Plaster of Paris, science journal

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



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Objective: b Compare and contrast Earth's geological features and the changes caused by external forces. (DOK2)

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

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Objective: b Compare and contrast Earth's geological features and the changes caused by external forces. (DOK2)

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

Teaching Strategy(ies):

1. Review what students learned about erosion in the previous lesson. Tell them that they are going to see how wind erodes sand and dirt.
2. Elicit background knowledge by having students share what happens to the sand on the beach during a wind storm or a hurricane.
3. Place a thin layer of sand dirt in a shoebox lid (or flat pan) and place the container where all of the students can see it.
4. Discuss what the students think will happen when the sand is blown by the wind.
5. Have students wear safety goggles. Tell the students that you are *Agent Wind* and you will create a wind by blowing gently through a straw. Have the students predict what will happen.
6. Blow gently across the sand using a straw. Ask the students what actually happened when Agent Wind blew across the sand and dirt. Have them point out where the particles actually were deposited.
7. Suggest that the students take turns being Agent Wind Erosion. Stress that they must blow gently or they might get sand in their eyes. Urge them not to inhale any sand or dirt through the straw. Give the students in each group a tray or shoebox lid with sand or dirt in it. Let them blow gently through the straw to move the sand, taking turns passing the lid with the sand or dirt. {NOTE: Each student must have their own straw.} Tell them to observe what happens.
8. After they have blown the sand and dirt, have them describe what happened and relate it to the wind blowing on the beach.
9. Ask the students what objects the wind can move. [small rock particles, sand, light soil]
10. Place rocks on top of the sand. Ask the students what happens to the soil around and under the rocks when the wind blows.
11. If available, use other things such as a fan or a blow dryer to simulate the wind when it blows.
12. Invite the students to go outdoors to look for evidence of wind erosion.
13. Upon returning have the students record their experiences in their science journal.

Materials: shoe box lid for each group, straw for each student, sand, rocks, fan, hairdryer, goggles, science journal

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Objective: b Compare and contrast Earth's geological features and the changes caused by external forces. (DOK2)

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

Teaching Strategy(ies):

1. Review what students learned about erosion and wind erosion in the previous lesson. Tell them that they are going to see how water erodes a variety of materials.
2. To introduce this part of the lesson, take the students outside to look for evidences of water erosion on the school grounds. Look for three types of terrain around the school grounds: bare soil, an area covered with vegetation, and concrete or asphalt. Pour the same amount of water on each of the terrain types and see what happens. Have the students compare and contrast what happens in the three situations.
3. Tell the students that they are going back into the classroom to see how water erodes sand and dirt.
4. Place the soil and dirt mixture in the rectangular pan about 5 cm deep. If fine colored sand is available, spread a thin layer over the mixture. This will help the students see that the sand moves due to erosion.
5. Prop one end of the pan about 10 cm. Poke a hole in the bottom of a paper cup and cover it with masking tape. Fill the cup with water.
6. Ask the students what will happen when you hold the cup over the dirt pan and pull off the tape. [The water will pour out onto the dirt.] Ask what they think will happen to the dirt.
7. Invite a student to be Agent Water Erosion and pull off the tape. Ask the students what this is like in nature. [rain]
8. Have the students describe their observations and relate them to what they have seen on the playground.
9. Allow time for many students to role-play Agent Water Erosion.
10. Have the students record their observations in their science journal.

Materials: rectangular pan, dirt and soil mixture, paper cup, masking tape, water, science journal

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

Teaching Strategy(ies):

NOTE: Prior to this activity, make large chunks of ice by freezing water in half-pint milk cartons with sand and bits of gravel added.

1. Review what students learned about erosion, wind erosion, and water erosion in the previous lessons. Tell them that they are going to see how ice erodes a variety of materials.
2. Relate to the students that a glacier is a huge amount of ice and snow that has collected over many, many years. Tell them that when the ice gets thick enough, it starts moving down the side of the mountain where it was formed. The tremendous weight of the glacial ice erodes the land by gouging and plowing up the ground and moving rocks around. Glaciers can move large amounts of soil and large rocks.
3. If possible, show pictures of a glacier, or a picture of the mountains in Yosemite National Park to explain the erosion of glaciers.
4. Flatten a piece of clay.
5. Remove the carton or paper cup from the "glacier" that was frozen prior to this activity.
6. Ask a student to be Agent Ice Erosion. Direct the student to move the chunk of ice over the clay.
7. Have the students describe what has happened to the clay. Discuss the large indentations and scratch marks left on the clay. Explain that this is similar to what happens in nature when a glacier moves over the ground.
8. Allow other students to play Agent ice Erosion and move the ice over the clay.
9. Have students record their observations of the activity in their science journal.

Materials: clay, half-pint cartons or paper cups, sand, gravel, picture of glaciers at Yosemite National Park, science journal

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Competency: 4 Develop an understanding of the properties of Earth materials, objects in the sky, and changes in Earth and sky.

Objectives: c Investigate, record, analyze and predict weather by observing, measuring with simple weather instruments (thermometer, anemometer, wind vane, rain gauge, barometer and hygrometer), recording weather data (temperature, precipitation, sky conditions, and weather events), and using past patterns to predict future patterns. (DOK 2)

Vocabulary: thermometer, temperature, degrees, Celsius, Fahrenheit, expands, predict, record

Teaching Strategy(ies):

1. Teacher will introduce the topic by telling the students to look out the window and see whether they can tell if it is hot or cold outside. Ask them what they would be looking for to tell them what the temperature is. Have the students record their own definition of temperature in their science journal.
2. Have the students describe what the words *hot* and *cold* mean when referring to air temperatures.
3. Ask them if they have seen a thermometer and if they know how it is used to measure temperatures.
4. Give each group a thermometer. Have the students examine the thermometer, record their observations in their science journal, and discuss those observations.
5. Explain to the students that the thermometer has colored alcohol in the bulb that expands [takes up more room] when it gets warm or hot and the liquid goes up the tube. Encourage them to offer ways they can get the alcohol to go up the tube. Record this in the science journal.
6. Ask them what they think will happen if they put their thumb on the bulb of the thermometer. Allow time for them to test their predictions and have them record their predictions in their science journal. Ask them what they know about the temperature on their finger. Record these observations in the science journal. [If the alcohol rose in the thermometer, their thumb was warmer than the surrounding air.] Have the students remove their thumbs and after a short time ask them what has happened to the column of liquid and why it happened. Record the actual observations in the science journal.
7. Provide the students with two buckets of water, one warm and one cool. Tell them to stick one hand in each bucket and note the difference. Have them predict what will happen when they place their thermometers in the two different buckets of water. Record the observations in the science journal.
8. Direct them to place the bulb ends of their thermometers in the buckets of water. Urge them to observe what happens to the red liquid. Record their observations in the science journal.
9. When the red line stops rising or falling, ask the students to read and record the temperature in their science journals.
10. Back in the large group setting have the students compare their results to those of the other groups.

Materials: immersion thermometer, small buckets, science journals, masking tape (optional), permanent colored pens (optional), www.fi.edu/weather/todo (information on making weather instruments)

Additional websites for science: www.woodlands-junior.kentsch.wk/time/index.htm/
www.engineeringinteract.org/resources/astroadventure/flash/concepts.html
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Objective: c Investigate, record, analyze and predict weather by observing, measuring with simple weather instruments (thermometer, anemometer, wind vane, rain gauge, barometer and hygrometer), recording weather data (temperature, precipitation, sky conditions, and weather events), and using past patterns to predict future patterns. (DOK 2)

Vocabulary: precipitation, rain gauge

Teaching Strategy(ies):

1. Teacher will write names of MS cities on index cards.
2. Students will choose a city to compare to Gulfport.
3. Students will create a graph from teach model in their science journal.
4. Students will measure precipitation at school using rain gauge.
5. They will chart on graph in their science journal.
6. Students will go to Weather Channel to find their chosen city and chart that precipitation.
7. Continue for 2 weeks (daily).
8. Students will record differences found in their science journal.
9. Students will determine average rainfall of both cities.
10. Students will write a paragraph to describe their findings in their science journals.

Materials: MS cities, index cards, rain gauge, graph paper, Internet, science journal

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Competency: Develop an understanding of the properties of Earth materials, objects in the sky, and changes in Earth and sky.

Objective: Compare and contrast the seasons and explain why seasons vary at different locations on Earth. (DOK 2)

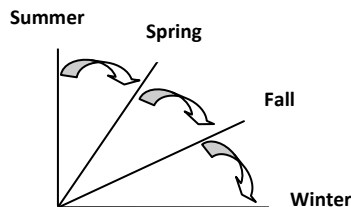
Vocabulary: season, Northern Hemisphere, Southern Hemisphere, revolve, tilt, axis, rotate

Teaching Strategy(ies):

1. Ask the students if they have ever noticed shadows when they are outdoors. Have them tell what they observed about the shadows.
2. Examine the picture below. Ask students, "What time of day do you think it is?" [Allow all answers.] After the experiment, revisit this picture and discuss.



3. Show the student a simple model of the Earth and Sun as seen from space. Allow them to explore the Sun's apparent movement across the sky over the course of a day.
4. Plan to conduct this activity on a sunny day. Invite students to imagine they are far out in space and can see the Earth and our Sun. ask students, "What would you expect to see happening and why? Make four different drawings to show what you would see during a day."
5. Divide the class into groups of four. Give each group a piece of 8.5" X 11" black construction paper and direct them to fold it hotdog style. Tape the short edges together making an envelope. Explain that the envelope will hold your thermometer during the experiment.
6. Give the students a data table to record observations during the experiment.
7. Using a desk lamp, have the students record the temperature after adjusting the angle of the lamp to simulate the changes that occur with the seasons. Use four different angles between 180 and 90 degrees to model the seasons.



8. Leave the thermometer inside the black envelope for five minutes (use stopwatch or timer) in each location. After five minutes is up, remove the thermometer from the envelope and record the temperature in the table.
9. Collect data from all groups for each location. Compare results and help students recognize the correlation of direct rays with temperature and consequently season.

Materials: tape, gooseneck lamp with at least a 60 Watt bulb, black construction paper, thermometer, watch or stopwatch



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Competency: Develop an understanding of the properties of Earth materials, objects in the sky, and changes in Earth and sky.

Objective: f Describe objectives in the universe including their movement. (DOK2)

- Physical features of the Moon (craters, plains, mountains)
- Appearance and movement of Earth and its Moon (e.g. waxing/waning of the Moon and lunar/solar eclipses)
- Why a planet can be seen different constellations (locations) at different times

Vocabulary: appearance, phases, gibbous, crescent, waxing, waning, solar eclipse, lunar eclipse

Teaching Strategy(ies):

1. Ask the students if anyone in the classroom has ever seen an eclipse. If they have, allow them to share their experiences.
2. Ask the students to explain what an eclipse is. [An event in which the shadow of a celestial body falls on another.]
3. Explain that there are two different types of eclipses that we can see on Earth: a solar eclipse and a lunar eclipse.
4. Call on two student volunteers to assist you. Give one student the small ball and the other the large ball. Ask the students, "In this model, one ball represents the Moon and the other the Earth. Which ball do you think is which? [The small ball is the Moon and the larger one is the Earth.] what does the light represent? [The Sun]" Have the students hold up the two balls so that the light is shining on them. Ask the students, "How much of the Earth is being lit by the Sun? [Half] How much of the Moon is being lit by the Sun? [Also half]"
5. Tell the class to watch carefully as the student holding the "Moon" slowly crosses over between the "Earth" and the "Sun" so that the smaller ball blocks some of the light hitting the larger ball. Ask the students, "What do you see on Earth when the Moon crosses in front of it? [A shadow] Is the shadow covering the entire Earth or only part of it? [Only part of it.]" Explain that during the solar eclipse, the Moon casts a small shadow on the Earth. From the Earth it looks like the Sun is disappearing behind the Moon. Ask, "Can everyone on the Earth see the solar eclipse when it happens? [No, only the people in the path the Moon passes over.]"
6. Next model a lunar eclipse. Ask, "What do you think happens during a lunar eclipse/ [The Earth crosses between the Sun and the Moon.]"
7. Instruct the two volunteers to switch positions so that now the Earth will pass between the Sun and the Moon. Tell the class to watch carefully as the larger ball blocks the light from hitting the smaller ball. Ask the students, "What is the main difference between the solar and lunar eclipses? [During the lunar eclipse, the shadow of the Earth blocks almost the entire Moon.]" Explain that because the Earth is so much larger than the Moon, it casts a much bigger shadow. As a result, a lunar eclipse lasts longer than a solar eclipse and is more visible to people on Earth.
8. Show pictures of the Moon during its phases. Ask, "What are these pictures of? [The Moon] Do these pictures show a lunar eclipse? [No, it is the moon in different phases.]" Explain that even though it looks like the Moon is being covered by a shadow, when the Moon goes through its phases, no shadows are involved at all.
9. Give each group of five students their own personal "Moon ball" model. Allow students to experiment with the balls to create solar and lunar eclipses.

Materials: overhead projector, small ball (tennis or softball), large ball (soccer ball or basketball), flashlights, photos showing the phases of the Moon



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Objective: f Describe objects in the universe including their movement. (DOK 2)

- Physical features of the moon (craters, plains, mountains)
- Appearance and movement of Earth and its moon (e.g., waxing/waning of the moon and lunar/solar eclipses)
- Why a planet can be seen in different constellations (locations) at different times

Vocabulary: physical features, craters, plain, mountain

Teaching Strategy(ies):

1. Discuss the definitions.
2. Students create a foldable, write definition, and draw a picture to represent the word.
3. Using Model Magic, or clay, the students will create a model of the moon and add the physical features.
4. Students will label and share.

Materials: Clay, toothpicks, paper

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www.engineeringinteract.org/resources/astroadventure/flash/concepts.html

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- Appearance and movement of Earth and its moon (e.g., waxing/waning of the moon and lunar/solar eclipses)
- Why a planet can be seen in different constellations (locations) at different times

Vocabulary: appearance, phases, gibbon, crescent, waxing, waning, solar eclipse, lunar eclipse

Teaching Strategy(ies):

1. Ask the students if anyone in the classroom has ever seen an eclipse. If they have, allow them to share their experiences.
2. Ask the students to explain what an eclipse is. [An event in which the shadow of a celestial body falls on another.]
3. Explain that there are two different types of eclipses that we can see on Earth: a solar eclipse and a lunar eclipse.
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5. Tell the class to watch carefully as the student holding the "Moon" slowly crosses over between the "Earth" and the "Sun" so that the smaller ball blocks some of the light hitting the larger ball. Ask the students, "What do you see on Earth when the Moon crosses in front of it? [A shadow] Is the shadow covering the entire Earth or only part of it? [Only part of it.]" Explain that during the solar eclipse, the Moon casts a small shadow on the Earth. From the Earth it looks like the Sun is disappearing behind the moon. Ask, "Can everyone on the Earth see the solar eclipse when it happens? [No, only the people in the path the Moon passes over.]"
6. Next model a lunar eclipse. Ask, "What do you think happens during a lunar eclipse? [The Earth crosses between the Sun and the Moon.]"
7. Instruct the two volunteers to switch positions so that now the Earth will pass between the Sun and the Moon. Tell the class to watch carefully as the larger ball blocks the light from hitting the smaller ball. Ask the students, "What is the main difference between the solar and lunar eclipses? [During the lunar eclipse, the shadow of the Earth blocks almost the entire Moon.]" Explain that because the Earth is so much larger than the moon, it casts a much bigger shadow. As a result, a lunar eclipse lasts longer than a solar eclipse and is visible to more people on Earth.
8. Show pictures of the Moon during its phases. Ask, "What are these pictures of? [The Moon] Do these pictures show a lunar eclipse? {No it is the Moon in different phases.} Explain that even though it looks like the Moon is being covered by a shadow, when the moon goes through its phases, no shadows are involved at all.
9. Give each group of five students their own personal "Moon ball" model. Allow the students to experiment with the balls to create solar and lunar eclipses.

Materials: overhead projector, small ball(tennis ball or softball), large ball (soccer ball or basketball), flashlights, photos showing the different phases of the moon



Gulfport School District
Science Instructional Strategies



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

Competency: 4 Develop an understanding of the properties of Earth materials, objects in the sky, and changes in Earth and sky.

Objective: g Summarize the process that results in deposits of fossil fuels and conclude why fossil fuels are classified as nonrenewable resources. (DOK 2)

Vocabulary: renewable and nonrenewable resources, fossil fuels

Teaching Strategy(ies):

Teacher will use Internet "Energy Story" to compare renewable energy to nonrenewable energy.

Materials: Internet, www.energyquest.ca.gov/story/chapter17

Additional websites for science: www.woodlands-junior.kentsch.wk/time/index.htm/

www.engineeringinteract.org/resources/astroadventure/flash/concepts.html

www.oxbow.concord.k12.in.us/fourthgrade_files/fourthgrade.html#science

www.kennedy.dubuque.k12.ia.us/technologypages/science2007.html



Gulfport School District
Science Instructional Strategies



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

Competency: 4 Develop an understanding of the properties of Earth materials, objects in the sky, and changes in Earth and sky.

Objective: c Investigate, record, analyze and predict weather by observing, measuring with simple weather instruments (thermometer, anemometer, wind vane, rain gauge, barometer and hygrometer), recording weather data (temperature, precipitation, sky conditions, and weather events), and using past patterns to predict future patterns. (DOK 2)

Vocabulary: wind vane

Teaching Strategy(ies):

1. On a windy day instruct students to look out of the window and name as many things as possible that tells them that the wind is blowing. [leaves moving, flag flying, movement of the low clouds, dust and dirt blowing, papers and trash moving on the ground] Ask them if they can point in the direction from which the wind is coming.
2. Take the students outside and ask them to determine from which direction the wind is blowing. If they need assistance, suggest that they wet a finger and hold it up. Ask them if one side of their finger feels cooler than the other one. Inform them that this is the direction from which the wind is blowing.
3. Play the game *Simon Says* using wind directions. For example, Simon says, turn so the wind is blowing in your face. Turn so the wind is on your back. Simon says turn so that the wind hits your right side, etc.
4. Explain to the students that the direction of the wind is shown by a wind vane. Describe a wind vane, show them a picture of different types of wind vanes, and ask if anyone has seen one and where. [on top of barns, houses, and at the weather station]
5. Take the students inside. Inform them that they are going to follow the directions on the sheet *Make a Wind Vane* so they can make their own wind vane.
6. After the students have finished constructing their wind vanes, test them with an electric fan.
7. Take the students and their wind vanes outside to see how well they work.
8. After they have seen a wind vane work, ask them if they can think of people who need to know the direction of the wind. [pilots, sailors, parachutists, hunters, air traffic controllers, farmers, weather forecasters]
9. Brainstorm with the students all the things that fly in the air or use wind and air currents to move. [birds, insects kites, balloons, clouds, seeds, gliders, etc.] Explain to the students that we use the wind in many ways: to turn windmills and pinwheels, to dry clothes, to fly kites, etc.
10. Record all the ideas and group them into natural or human-made categories using a tree map. Have students bring pictures of these things from home or draw pictures and make a Using the Wind bulletin board.

Materials: scissors, glue, drinking straws, straight pins, paper clips, pencils with erasers, tagboard, tape, 3" x 5" note cards, electric fan



Gulfport School District Science Instructional Strategies



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

Competency: 4 Develop an understanding of the properties of Earth materials, objects in the sky, and changes in Earth and sky.

Objective: c Investigate, record, analyze and predict weather by observing, measuring with simple weather instruments (thermometer, anemometer, wind vane, rain gauge, barometer and hygrometer), recording weather data (temperature, precipitation, sky conditions, and weather events), and using past patterns to predict future patterns. (DOK 2)

Vocabulary: wind vane

Teaching Strategy(ies):

1. Review with the students how they were able to tell if the wind was blowing or not.
2. Invite the students to brainstorm words to describe the action of the wind; gentle, light, breezy, mild, moderate, blustery, whipping, strong, harsh and dangerous.
3. Ask students if they can figure out how fast the wind is blowing. [look at the school flag, watch the trees and leaves blowing, or a loose piece of paper being blown. Help the students develop a wind scale. For example:
No wind – the flag hangs limply, the trees are still
Light wind – the wind is felt on the face, the leaves are just barely moving
Moderate wind – light flag extended, small branches move, pieces of paper and trash are blown around
Strong wind – large branches move, singing heard in wires
Dangerous winds – difficult to walk into the wind, small branches broken off tree
4. Have the students create their own wind-measuring tool by taping a precut 60 cm length of ribbon or crepe paper to the end of a ruler.
5. While indoors, have the whole class stand in a circle holding their wind measurers up above their heads. Guide everyone to observe that if they stand still, the ribbon or crepe paper streamer hangs down.
6. Tell the students to walk in a circle so they create their own air movement or wind. Guide the students to observe what happens to the wind measurers when they move faster or more slowly. Ask them what they would do to make their streamers stay still or stand straight out.
7. Take the students outdoors during different wind conditions and have them observe the action of the wind measurers as they stand still.
8. Discuss how certain types of wind can be helpful or harmful to us. Be sure not to arouse fears of tornadoes, hurricanes, and other extreme conditions.
9. Have the students make a pinwheel, see *Make a Pinwheel* sheet.
10. Let the students test their pinwheels indoors by blowing on the wheel.
11. Take the pinwheels outdoors and let the students test the spin. Have them see if the wind is as strong as their lungs. Urge them to see if they can use the pinwheel to determine the wind direction. Ask them if they think they can make some guidelines to know how fast the wind is blowing by using their pinwheel. Allow time for them to test their ideas.

Materials: tissue paper cut into one-inch wide strips, *Make a Pinwheel* sheet,