

The following instructional plan is part of a GaDOE collection of Unit Frameworks, Performance Tasks, examples of Student Work, and Teacher Commentary. Many more GaDOE approved instructional plans are available by using the Search Standards feature located on [GeorgiaStandards.Org](http://GeorgiaStandards.Org).

## Georgia Performance Standards Framework

### Second Grade

### Look Outside! What's Changing Now?

(15 weeks)

(Seasons, Weather, Moon phases, Matter)

**OVERVIEW:** In this unit students will observe and record changes that occur through the seasons, around them and in other parts of our country in regard to weather patterns. Seasons will be attributed to the tilt of the planet as it continues its orbit around the sun. Patterns will be constructed to help cement learning day and night cycles as related to seasonal changes. These seasonal changes will be observed in plant and animal reactions to the changing seasons. States of matter will be recognized in weather, solid as ice, liquid as rain, and gas as fog or clouds.

Monthly moon phases will be observed and recorded. Changing location and time of the rising and setting sun will be noted. Children this age will find comfort and security in the predictable patterns they will observe each month. Constructing charts and graphs as evidence of these patterns lends authority to conclusions.

#### STANDARDS ADDRESSED IN THIS UNIT

##### **Focus Standards:**

**S2E2. Students will investigate the position of sun and moon to show patterns throughout the year.**

- a. Investigate the position of the sun in relation to a fixed object on earth at various times of the day.
- b. Determine how the shadows change through the day by making a shadow stick or using a sundial.
- c. Relate the length of the day and night to the change in seasons (for example: Days are longer than the night in the summer.).
- d. Use observations and charts to record the shape of the moon for a period of time.

**S2E3. Students will observe and record changes in their surroundings and infer the causes of the changes.**

- a. Recognize effects that occur in specific areas caused by weather, plants, animals,/or people

**S2CS3. Students will use tools and instruments for observing, measuring, and manipulating objects in specific activities.**

- a. Use ordinary hand tools and instruments to construct, measure, and look at objects.

**S2CS1. Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.**

- a. Raise questions about the world around them and be willing to seek answers to some of the questions by

**STANDARDS ADDRESSED IN THIS UNIT**

**Supporting Standards:**

**ELA2LSV1. The student uses oral and visual strategies to communicate. The student**

- a. Interprets information presented and seeks clarification when needed.
- b. Begins to use oral language for different purposes : to inform, to persuade, and to entertain.
- c. Uses increasingly complex language patterns and sentence structure when communicating.
- d. Listens to and views a variety of media to acquire information.
- e. Increases vocabulary to reflect a growing range of interest and knowledge.

**SS2E1. The student will explain that because of scarcity, people make choices and incur opportunity costs.**

**SS2G1 The student will locate major topographical features of Georgia and will describe how these features define Georgia’s surface.**

- a. Locate all the geographic regions of Georgia, Blue Ridge Mountains, Piedmont, Coastal Plain, Valley and Ridge, and Appalachian Plateau.

**M2D1. Students will create simple tables and graphs and interpret their meaning.**

- a. Organize and display data using picture graphs, Venn diagrams, bar graphs, and simple charts/tables to record results.
- b. Know how to interpret picture graphs, Venn diagrams, and bar graphs.

**LITERATURE SELECTIONS**

Source of Recommendation	Title	Author	ISBN
2007 NSTA Outstanding Trade Book	I Like Weather! How Does the Sun Make Weather?	Judith Williams	0766023176
2007 NSTA Outstanding Trade Book	Amazing Science: Rumble, Boom! A Book About Thunderstorms	Rick Thomas	104809295
2007 NSTA Outstanding Trade Book	Changing Weather: Storms	Kelley MacAulay & Bobbie Kalman	0778723143
2007 NSTA Outstanding Trade Book	I Like the Seasons! What Happens in Spring?	Sara L. Latta	076602199

## ENDURING UNDERSTANDINGS

Students will understand that:

- The seasons change in a cycle.
- Rain is an example of liquid, ice is an example of solid, and air is made of gases.
- The length of day and night change in a season.
- The location the sunset and sunrise will change with the seasons.
- Plants and animals are affected by the season.
- People use specific tools to record seasonal changes.
- Each month the Moon goes through a cycle of phases.

## ESSENTIAL QUESTIONS:

- What are the seasons?
- Why do the seasons happen in an order?
- How do the seasons affect people?
- How do animals change with the seasons?
- What is weather?
- What are examples of solid, liquid, and gas in weather?
- What is the weather like in Georgia?
- How do people measure weather?
- Why is weather important to us?

MISCONCEPTIONS	PROPER CONCEPTIONS
<ul style="list-style-type: none"> <li>• There is no pattern to seasons.</li> <li>• Ice, snow, rain and fog are all made from different substances.</li> <li>• The length of day and night are always the same.</li>   <li>• The sun rises and sets in the same place every morning and night.</li>   <li>• Animals look and act the same throughout the year.</li>   <li>• There is no pattern to the shapes of the moon.</li> </ul>	<ul style="list-style-type: none"> <li>• Seasons occur in a circular pattern.</li> <li>• Ice, snow, rain and fog all come from water and are examples of solid, liquid, and gas.</li> <li>• The length of day and night change with the seasons due to the tilt of the earth as it orbits around the sun.</li> <li>• The sun rises and sets at different places throughout the year, and the exact place the sun comes up and goes down can be predicted in relation to a fixed object on earth, like a tree.</li> <li>• Many animals are affected by the seasons; some animals' appearance and habits change with the time of year.</li> <li>• The Moon goes through a repeating cycle of phases and can be charted.</li> </ul>

CONCEPTS:	KNOW AND DO	LANGUAGE	EVIDENCE OF LEARNING
<p>Weather is seasonal and can be predicted.</p> <p>Rain is a liquid form of water. Fog is water in a gas state and snow is a solid, or crystal form of water. Ice is a solid form of water.</p> <p>Knowing the weather can help people prepare for up coming events.</p>	<p>Students will observe, predict, and keep a record of the weather over a period of time.</p> <p>Students will demonstrate how they prepare for different seasons.</p> <p>Students will know that animals and plants respond to seasonal changes and will demonstrate this understanding through</p>	<p>Weather patterns, climate, Map Key, Front, Bar graph Prediction, Expected Chance, hint</p> <p>Solid, liquid, gas, snow, crystal, fog, rain</p> <p>Summer, winter, spring, fall</p> <p>Seasonal, prepare</p> <p>Shed, hibernate, prepare</p>	<p>Students will record daily the weather on bar graphs that will be evidence of their observations for the month. These observations will reflect the state of matter they see, solid, liquid, or gas.</p> <p>Students will predict the weather each morning and record their prediction in a science journal, using the weather page in a</p>

Weather in specific areas effects people, plants, and animals.	drawings, puppet shows, role play, and factual presentations.		newspaper, a weather channel on TV, or <a href="http://www.weather.com">www.weather.com</a> as a source. Students will map the weather pattern for a day across a specific area/region of the US.
Temperature is recorded on a thermometer.	Students will know temperature is registered on a thermometer. Students will record their findings.	Temperature High, low	Students will keep a record of temperature highs and lows in daily science journals/class chart and figure the difference.
Rain is measured by a rain gauge.	Students will know rain is measured in a rain gauge. Students will record their findings.	Rain Gauge, Clouds, stratus, cumulus, Cirrus, evaporate Drought Flood	Students will keep a record of rainfall amounts and calculate totals for the period.
The moon goes through a cycle of phases each month.	Students will predict and identify the phases of the moon. Students will record the phases of the moon over a monthly cycle.	Moon, full, half, quarter, crescent, new	Students will illustrate and label and date the phases of the moon as they occur.
The length of day and night change in seasons.	Students will predict and identify sun rise and sun set over a period of time.	Sun, position, rise, set sunrise, sunset	Students will keep a record of sunrise and sunset from observations and resources.
The sun comes up and sets in different locations throughout the year.	Students will predict and observe sunrise and investigate its position in relation to a fixed object on earth.	North, South, East, West	Students will illustrate in a Science Journal/chart where the sun comes up in relationship to a fixed object on earth.

## GRASP

**Culminating Activity:** GRASP activity

Weather station

**GRASP**

**Goal:** To produce a daily weather reporting program and compile records in the form of graphs and charts as evidence of seasonal observations.

**Role:** Weather person, Temperature recorder, rain gauge recorder, map reader/presenter, computer/newspaper checker for moon phases, and times for sunrise and sunset.

**Audience:** second grade classmates

**Scenario:** Your class has been hired by the local weather station to produce a daily weather program for kids. Your task is to gather a team and compile information each morning from local TV weather forecasters, [www.weather.com](http://www.weather.com), and the local weather page in the daily newspaper, and present your findings to the rest of the class. Your daily efforts must be recorded on either a chart or in a science journal and monthly bar graphs. This report will include high and low temperature predictions, weather for Georgia in our region and across the United States, Moon phase observed, rainfall measured, location of rising sun, and exact time of sunset and sunrise.

**Product:** Daily weather forecasted and findings recorded on bar graphs and class charts. Class charts may include illustrations of seasonal weather in the form of solid (ice or snow), liquid (rain), or gas (fog or clouds). Charts and graphs can be displayed and used as a source of reference to compare each month. The weather forecast can be video recorded and replayed for neighboring classrooms.

## TASK 1

Lesson Title: Weather

Essential Question: How does the Sun Make Weather?

Teacher Instructions: Read the book [I Like Weather! How Does the Sun Make Weather?](#) Discuss safety issues about not looking at the sun. Observe where the sun comes up in the morning and use a fixed object as a point of reference. Have the children draw pictures of their observations being sure to include the fixed object along with the sunrise. Allow part of the class to sit in the sunshine from a window while the discussion is going on about what we get from the sun. Note the warmth on the backs of the children who sat in the sun. Ask the question, why do we care about the weather? (So we will have some idea of what to wear that day. So we can plan for outside recess or inside activities.) Introduce a thermometer as a scientific tool used to record temperature. Set the thermometer in the sunshine and set another one somewhere else in the room. Check back to see if a difference is noted. Another option is to take students outdoors in the sun. Put one thermometer in the sun and another in a shaded area. Set up a thermometer outside to record the temperature daily. Explain this will become a daily task and assign it as a duty for part of the morning routine. Bring in a daily newspaper and open it up to the weather section. Allow the children to find where the predictions of the high and low temperatures are located. Record these predictions in journals or on a class chart. The high and low temperatures can be subtracted to find how much change will be noted on the thermometer. Check back at the end of the day to see if the predictions were right. Record your findings. Introduce the vocabulary word climate. Climate is the weather over a period of time in a particular area.

Assessment: Daily recordings on class chart or in individual journals to show time of sunrise and prediction of sunset, high and low temperature and the range, actual temperature colored in on paper thermometer.

Draw and label the phases of the moon you see each month. Make this on a flip book.

Enrichment/Extension/Homework: Over the period of the unit (12 weeks) chart the location of the sunbeam that comes through the window every morning or afternoon. Mark the edge with a piece of tape and add the date. Ask the children why it moves? Visit the site [www.astro.uniuc.edu/projects/data/seasons/seasons.html](http://www.astro.uniuc.edu/projects/data/seasons/seasons.html) and watch the visual of the earth orbiting. Role play the earth rotating in its orbit around the sun at a tilt. Note the tilt is what gives us the warmer summers and the colder winters. When our part of the earth is tilted away from the sun, we will receive less warmth from the sun. When we are tilted towards the sun we will receive more direct sunlight, so it will be warmer.

Note the Moon phases on the weather page in the newspaper. Have a student volunteer draw the moon each day as it appeared in the nightly sky. Add this to the daily morning routine.

Cookie Moon Treat-Divide the class into teams with 4 to 6 on a team. Give each group a set of vanilla wafers and a small scoop of chocolate frosting along with plastic knives or popsicle sticks for spreading. Challenge each group to show the phases of the moon by adding the

frosting to represent the shadow. It is important to note the cookies stay whole just like the moon stays in one piece as the shadow of the Earth covers and uncovers it each month.

Use a copy of the United States map and have the children color in the temperature zones as shown on the weather page of the newspaper or on the website. Use the map key to explain what temperature each color represents. Find North, South, East West on this map.

## TASK 2

Lesson Title: What was that Boom?

Essential Question: Why do people measure weather?

Teacher Instructions: On a rainy day, observe the clouds and rain. Read the story, [Amazing Science: Rumble, Boom! A Book About Thunderstorms](#). Show the children a rain gauge or make one from a clear container. Practice reading liquid measurements. Set the rain gauge outside where it can be observed from the classroom window or door and add checking the rain gauge as part to the morning daily routine. Define drought and flood. Illustrate the water-cycle on an overhead or class chart. Allow the children to copy or draw the water-cycle on their own paper. Check for understanding and labels for rain, cloud with lightning bolt, puddle, and evaporate. Give out index cards and have the children draw simple versions of the water-cycle. Lay a clear zip-lock bag on top of the index card and secure to table with tape. Give each child a permanent marker (fine-tip) and ask him/her to trace over the drawing so the water-cycle will be on the outside of the baggie. When complete, put a spoonful of wet sand into the zip-lock baggie and zip it closed. Place the bags where they will receive full sunlight. When the sun shines on the bag, fog will appear along with droplets to make the rain-cycle inside the bag. The index cards should serve as study cards for the children to take home.

Visit the Magic School Bus website and do the What Did You See? Water Cycle activities ([www.magicschoolbus.com](http://www.magicschoolbus.com) .)

Review the three states of matter, solid, liquid, and gas and how it can be found in the water cycle as rain snow/ice/ fog or cloud.

Assessment: Ask each child to draw from memory pictures of the rain coming out of the clouds falling to the ground and collected into puddles. The sun comes out and the rain evaporates into the sky where it collects into clouds. Label the parts of the water cycle-cloud, evaporate, rain, puddle. Include the labels for the three states of matter, solid, liquid, and gas.

Enrichment/Extension : Identify different kinds of clouds in the sky. Go outside and locate different kinds of clouds. Note the direction the clouds are moving. Are the clouds moving in the same direction as the wind? Why would people use clouds to predict the weather? What do the different kinds of clouds means? Help students understand clouds are water in a gas form.

### TASK 3

Lesson Title: Seasons

Essential Question: How do plants and animals change with the seasons?

Teacher Instructions: Ask the children to fold a square paper into 4 quarters. Label each section, spring, summer, fall, and winter. Add arrows to show the progression of the seasons. Read I Like the Seasons! What Happens in Spring? or a similar book. You may decide to read a different book on each season. After some discussion about all four seasons, divide the class up into 4 teams. Challenge each team to do research on a different season. Assign or let each group pick. One person will be a tree, one will be a plant bulb, one will be a hairy mammal, and one will be an insect or a bird. Allow time for pictures/posters, murals, costumes, or puppets to be created.

Assessment: Presentations of team season projects

Enrichment/Extension/Homework: Challenge the children with questions. What happens to plants and animals during floods or droughts, hurricanes or tornadoes? What can people do during these events? Why is weather forecasting important to us?

Book Report Day—Have the children read books on seasons, weather, or the moon and present their reports orally using the Reading Rainbow format of, “My name is \_\_\_\_\_ and do I have a book for you!” Support this oral report with posters, pictures, murals, book jackets, costumes, or information downloaded from the web on the topic.

## TEACHER RESOURCES

### **Additional Children's Literature:**

Aragon, Jane Chelsea (1988) Winter Harvest  
Arvetis, Chris and Palmer, Carole (1984) What Makes Day and Night?  
Asch, Frank (1982) Happy Birthday Moon  
Berger, Melvin and Gilda, (2004) The Moon  
Brantley, Franklyn (1998) Day Light, Night Light Where Light Comes From  
Christina, David (1996) The First Snow  
DePaola, Tomie (1994) Four Stories for Four Seasons  
Gibbons, Gail (1994) The Seasons of Arnold's Apple Tree  
Kespert, Deborah (2000) Rain and Shine  
Minarik, Else Holmelund (1957) Little Bear  
Senisi, Ellen (2001) Fall Changes

### **Web Resources:**

[www.weather.com](http://www.weather.com)

Learning About the Seasons, for teachers: <http://www.kathimitchell.com/seasons.htm#For%20Teachers>

Learning about the seasons for students: <http://www.kathimitchell.com/seasons.htm>

Activities for the seasons: <http://www.theteacherscorner.net/seasonal/>

[www.shiningrise.com/seasons/index.htm](http://www.shiningrise.com/seasons/index.htm)

[www.enchantedlearning.com/subjects/astronomy/planets/earth/seasons.shtml](http://www.enchantedlearning.com/subjects/astronomy/planets/earth/seasons.shtml)

[www.magicschoolbus.com](http://www.magicschoolbus.com) science experiments available on website

[www.astro.uniuc.edu/projects/data/seasons/seasons.html](http://www.astro.uniuc.edu/projects/data/seasons/seasons.html) visual of orbit with tilt

### **Additional Teacher Resources:**

Magic School Bus videos and CD's Kicks Up a Storm and Makes a Rainbow

Music - Four Seasons--Vivaldi (Classical) Seasons Arias and Choruses--Haydn (classical) Classics for All Seasons--Various Artists (classical)