

SEASONS AND DAY LENGTH

(MODIFIED FOR ADEED)

INSTRUCTIONS



Science Concept:

The length of daylight changes with the seasons.

Objectives:

The student will:

- make observations;
- interpret data; and
- explain the length of daylight changes with the seasons.

GLEs Addressed:

Science

- [4] SD3.1 The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by recognizing changes to length of daylight over time and its relationship to seasons.
- [4] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.

Writing

- [4] W2.2.2 The student writes for a variety of purposes and audiences by writing in a variety of nonfiction forms using appropriate information and structure (i.e., personal letters, recounts, descriptions or observations).

Vocabulary:

air temperature - the degree of heat or cold in the air (measured in the shade to avoid direct sunlight exposure) as shown by a thermometer

day length - the length of a day

seasons - one of the four quarters into which the year is commonly divided

vegetation - plant life or cover (as of an area)

Materials:

- Gibbons, G. (1995). *The Reasons for Seasons*. New York: Holiday House.
- Newspapers (local newspaper for each of the observation days)
- Thermometers
- STUDENT WORKSHEET: "Observation Form"

Activity Procedure:

Gear Up

Process Skills: communicating and observing

1. Read *The Reasons for Seasons* by Gail Gibbons to the class.
2. Discuss the book. Ask students what they observed with each change of season.

Explore

Process Skills: observing and recording data

3. Select a nearby site to use as an observation spot.

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4. One day a week for each week of the school year, bring students to the observation spot and ask them to make observations and record the date, air temperature, and vegetation changes on the STUDENT WORKSHEET: "Observation Form." (Make extra copies as needed.)
5. Provide students with the local newspapers so that they can record local sunrise, sunset, and length of daylight, or go online to http://aa.usno.navy.mil/data/docs/RS_OneDay.php for sunrise and sunset data. The current weather can be retrieved from <http://www.nws.noaa.gov>.

Generalize

Process Skills: communicating and interpreting data

6. Each week, as a class, graph the hours of daylight for the week, adding to a continuous graph for the season (at the end of the year there should be three graphs, one per season of the school year). Ask students what changes occurred to the day length.
7. Soon after each official season change, ask students to look at the graph of the season and discuss what happened to the day length between the seasons and to think about what the relationship is between the length of days and the seasons.

Apply/Assess

Process Skills: communicating and interpreting data

8. If possible, coordinate with a class/school in another country or state to trade data. Instruct students to send their observations and data to the cooperating class/school. As a class, analyze the results received from the other school.
9. Instruct students to write a summary of the information they collected and how the length of day changed with the seasons at both class/school observation sites.

Extension Ideas:

Process Skills: communicating and interpreting data

1. Ask students to determine what vegetation changes occurred in each season.
2. Ask students to graph the temperature and day length and analyze their relationship.

Answers to Student Worksheet:

Answers will vary.

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RUBRIC

| Objective | GLE | Emergent | Developing | Proficient | Advanced |
|---|-------------------------|--|--|--|---|
| The student explains the length of daylight changes with the seasons. | [4] SD3.1 | The student does not indicate in writing or oral explanation that the length of daylight changes with the seasons. | The student explains orally or in writing that the length of daylight and/or seasons change, but does not indicate a relationship. | The student explains orally and in writing that the length of day changes over time and makes reference to the seasons. | The student explains orally and in writing that the length of day changes with the seasons. |
| The student collects data. | [4] SA1.1 | No data is recorded on the student observation form. | The student completes only part of the student observation form and/or records the wrong information. | The student completes most of the student observation form, and most of the information is correct.. | The student completes all of the observation form, and all of the information is correct. |
| The student interprets data. | [4] SA1.1 [4] W2.2.2 | The student does not explain what the observations and recorded data indicate. | The student does not completely explain the observations and recorded data and does not draw a conclusion from it. | The student clearly explains the observations and recorded data, or draws a reasonable conclusion from it, but not both. | The student clearly explains the observations and recorded data and draws a conclusion from it. |

NAME: _____

OBSERVATION FORM

Date: _____ Temperature: _____

Daylight:
Sun Rise: _____ Sun Set: _____ Day Length: _____

Observations:

Date: _____ Temperature: _____

Daylight:
Sun Rise: _____ Sun Set: _____ Day Length: _____

Observations:

Date: _____ Temperature: _____

Daylight:
Sun Rise: _____ Sun Set: _____ Day Length: _____

Observations:

Date: _____ Temperature: _____

Daylight:
Sun Rise: _____ Sun Set: _____ Day Length: _____

Observations:

