

# Four Seasons

## Summary

This lesson will demonstrate assessment techniques (pre, formative, post). This lesson will also identify and address misconceptions about what causes the seasons.

## Additional Core Ties

English Language Arts Grade 6

[Writing Standard 1](#)

## Time Frame

1 class periods of 45 minutes each

## Group Size

Small Groups

## Materials

Classroom set:

- 8 Globe pencil sharpeners available at oriental trading and other sites

- Marked spots on the following latitudes - equator, 35 degrees N & S, 70 degrees N & S

- 8 foam core 6"x6"

- Sold in sheets 36"x48" cut into 6"x6"

## Background for Teachers

Teachers need to understand that the seasons are caused by the earth's tilt and that the earth revolves around the sun. Earth's tilt causes sunlight to fall more intensely on different parts of the Earth during various parts of the year. This causes varying amounts of daylight and the amount of solar energy that reaches a location throughout the year, which produces the seasons.

## Student Prior Knowledge

Students should have an understanding/review of longitude and latitude lines and how that relates to locations, cities, etc. on the globe. Students should also be familiar with northern and southern hemispheres, and equator.

## Intended Learning Outcomes

2. Manifest Scientific Attitudes and Interests

e. Seek and weigh evidence before drawing conclusions.

Intended Learning Outcomes - Linked to Standards:

Scientific attitudes, interests, and misconceptions will be manifested in students as they analyze a model and seek and weigh evidence before drawing conclusions.

## Instructional Procedures

Introduction:

Pre-assess student understanding of the seasons by asking students to diagram the position of the sun and earth during winter, spring, summer, and fall. Collect the diagrams and move on to the activity.

Tell students that we will be using the scientific method to determine the reasons for the seasons.

### Activity:

Show students the following YouTube clip to introduce "Longitude & Latitude"

If you don't see the embedded video above [use this link](#).

Guide students through a laboratory investigation to answer the question

### Question:

"How does the amount of daylight change throughout the year at different latitudes?"

### Hypothesis:

If there are more hours of daylight then the season will be \_\_\_\_\_, because

### Variables:

The independent variable will be the latitudes. The dependent variable will be hours at each latitude during each season.

### Materials:

See above

### Procedures:

Divide students into 8 groups (four stations set up, two groups at each station).

At each station, student groups will work together to rotate the globe through 12 rotations -- representing a 24 hour period. Have the first rotation begin at sunset, all the letters at the shadow line. At each rotation, students will record if marker is on the light side of the shadow line or not, by writing yes or no. (Teacher note: It will be a point of confusion for students when the marked locations on the globe land on a shadow line. Specify that the sunset shadow line is a No and the sunrise shadow line is a Yes.)

After students have recorded data for all 12 rotations, they will move to the next season and record data for those 12 rotations. After students record data for all 4 seasons, they will record data on class graph.

### Results:

Students will analyze class data and relate the results to their hypothesis.

### Conclusion:

Students will come to consensus on a claim that the results either or support or does not support their hypothesis.

### Strategies for Diverse Learners

Accommodating the needs of diverse learners can be accomplished by the use of manipulatives, modeling, and visual representation of data.

### Extensions

#### Tangent lines

: Use the idea of a tangent line to have students measure the angle that the sun's rays strike each latitude location.

Students can stand in different locations other than the four seasons around the "light source" and observe direct and indirect light.

### Assessment Plan

#### Pre-assessment

: Pencil/paper pre-assessment, class/community survey, observational formative assessment -- class discussions (what questions students are asking and are able to answer)

Post-assessment: pencil/paper assessment, authentic summative performance assessment -- modeling any given season.

## Bibliography

Salt Lake City School District

Grade Level 6 Curriculum Standards PDF

[www.slcschools.org/departments/curriculum/documents/Grade-6-2013.pdf](http://www.slcschools.org/departments/curriculum/documents/Grade-6-2013.pdf)

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