

Lesson Plan Title: **Arctic Days**

**Developed by:**

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**Discipline / Subject:**

Language Arts / Science

**Topic:**

Dynamics of light in Alaska

**Grade Level:**

Grades 3 – 6

**Resources / References / Materials Teacher Needs:**

- Book *Arctic Lights: Arctic Nights* by Debbie S. Miller with Illustrations by Jon Van Zyle
- Internet access
- “Arctic Days Record Sheet”
- Styrofoam balls
- Wooden skewers
- Paint - green
- Lamp
- Copy of “Four Seasons” activity from <http://www.learninghaven.com/science/articles/seasons.htm>
- Transparency of “Earth-Sun Relationship” page 7 from [http://www.globe.gov/tctg/earth\\_la\\_seaphen\\_s4.pdf?sectionId=259](http://www.globe.gov/tctg/earth_la_seaphen_s4.pdf?sectionId=259)

**Lesson Summary:**

After reading the book *Arctic Lights: Arctic Nights*, students will track and record times for sunrise, sunset, as well as the average high/low temperatures on the twenty-first of each month. They will create models in order to examine the relationship the earth and sun have on seasonal change and the length of day.

**Standard’s Addressed: (Local, State, or National)**

1. The student constructs meaning from a wide range of texts.
2. The student recognizes the use of comparisons and contrast in texts.
3. The student understands the interaction and organization of the sun and how this affects life on Earth.
4. The student knows that the tilt of the Earth on its axis as it rotates and revolves around the sun causes changes in seasons, length of day, and the energy available.

<p><b>Learning objectives:</b> Students will:</p> <ul style="list-style-type: none"> <li>• Read to make inferences</li> <li>• Compile and organize data in order to make comparisons</li> <li>• Examine the relationship the earth and sun have on seasonal changes and the length of the day</li> </ul>	<p><b>Assessment:</b></p> <ul style="list-style-type: none"> <li>• Completion and accuracy of record sheet</li> <li>• Students explain the relationship the Earth and sun have on seasonal change</li> </ul>
<p><b>Procedural Activities</b></p> <ol style="list-style-type: none"> <li>1. Read the book <i>Arctic Lights: Arctic Nights</i></li> <li>2. Discuss the seasons and the changes in the length of day each month as seen in the book. <i>How does the change in the seasons relate to the length of day? Are the seasonal changes noticeable? How do the seasonal changes affect the plants and animals? How would the seasonal changes affect humans?</i></li> <li>3. Create the Earth models – use the Styrofoam ball, paint the continents, use a black permanent marker to draw the Equator, then push the wooden skewer into the center of the Earth from north to the south</li> <li>4. Follow the directions to “Four Seasons” – use a lamp to have the Earth models revolve around the sun. <u>Remember:</u> keep the tilt of the Earth about 23 degrees (from a vertical position) and the skewer (at top of model) pointing north as it revolves around the lamp (sun). <i>What do you notice about the rays from the sun as they hit the Earth?</i></li> <li>5. Share the “Earth-Sun Relationship” transparency. <i>What do the differences in the Watts/meter sq. (measure of the Sun’s energy) on the maps tell us? What relationship does the Earth and sun have on seasonal change?</i></li> <li>6. Use the Internet, or newspaper, to start filling in the “Arctic Days Record Sheet” with information from the location where students live.</li> <li>7. Continue above until record sheet is complete</li> <li>8. Compare and contrast the data from the record sheet and information from rereading the book. <i>How are the two locations different? How are they the same? Can you see distinct seasonal changes in the area you live? Are they as noticeable as the changes that take place in the Arctic? Are they more noticeable? How do seasonal changes affect the plants and animals that live in your location? How do they affect humans? What changes do you see in temperatures? How do seasonal changes affect the temperatures in both locations?</i></li> </ol>	

**Materials Students Need:**

- Styrofoam ball
- Paint
- Permanent marker
- Copy of “Arctic Days Record Sheet”
- Wooden skewer

**Technology Utilized to Enhance Learning:**

- Sunset/Sunrise data: [http://www.sunrisesunset.com/custom\\_srss\\_calendar.asp](http://www.sunrisesunset.com/custom_srss_calendar.asp)
- “Four Seasons” materials:  
<http://www.learninghaven.com/science/articles/seasons.htm>
- For Transparency of Earth-Sun Relationship page 7:  
[http://www.globe.gov/tctg/earth\\_la\\_seaphen\\_s4.pdf?sectionId=259](http://www.globe.gov/tctg/earth_la_seaphen_s4.pdf?sectionId=259)
- Background Information:  
<http://www.physicalgeography.net/fundamentals/6h.html>

**Other Information**

Understanding seasonal change is an abstract concept for students and teaching this concept can create misconceptions. It is important for teachers to be aware of this and look at background information prior to teaching the concept.

Putting a sundial up at your school will help children see the changes in the direction of the sun’s rays during the year.

**Modifications for special learners/ Enrichment Opportunities**

Reading the book several times will help children understand what is happening throughout the book.

Revisiting the concepts taught in this lesson will help struggling learners.