**8th grade Weather and Water, Investigation 3: Seasons and Sun**

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**Big Idea or Main Concept of Lesson**

What causes seasons?

**The Hook**

Students’ notions of seasons often center on distance from the Sun.

Student A from Mr. Dance’s 5th grade science class was explaining why we observe different seasons,   
“Summer is hot because Earth is closer to the Sun. It makes sense…when you stand closer to a fire or stove, you get warmer.”

What do you think about this statement? Do you agree or disagree? Explain. If you disagree, what other factors may contribute to why we observe different seasons?

**Necessary Prior knowledge/experience**

Know the difference between rotation and revolution.

Rotation: Earth turning on its axis. Revolution: the movement of one object around another

**Suggested Adaptations/Improvements to the Procedures**

How does changing the tilt of the planet affect the seasons?

Ask students : As you revolved the Earth around the Sun, what observations did you make that you believe may contribute to the temperature of different places on Earth based on the position of the Sun and Earth?

**Suggestion for Lesson Extensions/Addenda**

Have students design an experiment to determine how the amount of sunlight changes at different latitudes when the Northern Hemisphere is tilted towards the sun. A possible data table to record measurements:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Latitude | Circumference of Each Latitude | Distance Illuminated | Percentage Illuminated | Hours of Daylight |
| Equator | 97 cm | 41 cm | 42% | 10.08 hours |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Create a poster that shows all the factors that contribute to the reasons we have seasons.

What is the climate like in other planets?

Have kids rotate around the sun and determine the length of their shadow.

Provide students with guided written instructions to discover what happens when the Earth revolves around the Sun. Divide students into groups so the students have the opportunity to experience how the tilt of the Earth affects the amount of sunlight hits different part of the Earth.

**Reflections**

Instead of the teacher modeling the revolution of the Earth around the Sun, divide students into groups of four and provide them with a light source and a globe and allow them to practice revolving the Earth around the Sun. Provide guidance by letting students know they should keep the north pole pointed in the same direction while revolving the Earth around the Sun.

Set up the lab in different stations. One station to show the revolution of the Earth around the Sun and the other station for Beam Spreading.