

Lesson Plan: The Dance of the Seasons

Materials Needed:

- A sturdy chair (to represent the Sun)
- A strip of paper or ribbon long enough to go around River's waist (the "Equinox Belt")
- Markers or crayons (specifically yellow, green, and orange/brown)
- Tape
- An open space large enough to walk in a big circle around the chair

Subject

Science (Earth and Space)

Grade Level

3rd-4th Grade (Age 9)

Time Allotment

45 minutes

1. Learning Objectives

By the end of this lesson, River will be able to:

- **Demonstrate** the Earth's revolution around the Sun using her own body.
- **Explain** that the Earth is tilted on its axis and that this tilt stays the same as it orbits.
- **Identify** the correct position for each solstice and equinox in the "dance."
- **Describe** how the Earth's tilt causes direct or indirect sunlight, leading to seasons.

2. Alignment with Standards

This lesson aligns with common elementary science standards related to Earth's place in the universe, such as the Next Generation Science Standards (NGSS 3-ESS2-1), which focuses on representing data to describe typical weather conditions expected during a particular season.

3. Instructional Strategies and Procedure

Part 1: The Hook & Prop Creation (10 minutes)

Goal: To spark curiosity and build the tools for our activity.

1. **Ask River:** "What's your favorite season? What do you notice about the days in summer versus the days in winter? Are they longer or shorter?" Discuss her answers briefly.
2. **Introduce the Challenge:** "Sometimes it's tricky to understand *why* we have seasons. Today, you are going to become the Earth and we're going to choreograph a 'Dance of the Seasons' so you can feel how it works!"
3. **Create the Equinox Belt:**
 - Take the long strip of paper or ribbon. Explain, "This is your equator, the belt that goes

around the middle of the Earth."

- Have River decorate it. Ask her to draw a bright yellow sun on the front of the belt. On the back, have her draw a moon or stars. On the sides (at her hips), have her color one side with spring green and the other with autumn orange/brown.
- Fit the belt around her waist and tape it securely. This belt is key! When the "Sun" (the chair) shines directly on the spring or fall colors on her hips, it's an equinox.

Part 2: The Dance of the Seasons (25 minutes)

Goal: To kinesthetically model the Earth's tilted revolution around the Sun.

1. **Set the Stage:** Place the chair in the center of the room. "This chair is our Sun. It gives us light and heat, and it doesn't move. You, River, are Planet Earth."
2. **Establish the Tilt:**
 - Ask River to stand tall and then tilt her whole upper body slightly to the left. "The Earth doesn't sit straight up and down; it has a permanent tilt. This is the most important rule of our dance: **Your tilt never, ever changes.** No matter where you are in the room, you must always be tilted in the same direction."
 - To help her remember, have her point to a specific spot on the wall (e.g., a clock or a picture) and tell her the top of her head should always be aimed toward that spot.
3. **The Choreography:** Guide River through the "orbit" (walking in a large circle, or ellipse, around the chair). Stop at the four key positions.

Position 1: Winter Solstice

- Have her stand at a point where her tilt is leaning **AWAY** from the Sun (chair). Her back will be getting more "sunlight" than her front (representing the Northern Hemisphere).
- **Ask:** "Is the top part of you (the Northern Hemisphere) tilted toward the Sun or away from it?" (Away). "Right! So, are we getting direct sunlight or less direct sunlight?" (Less).
- **Choreography & Chant:** Have her shiver a little and say: "**Tilted away, the sun's rays stray. A short, cold day, it's Winter Solstice!**"

Position 2: Vernal (Spring) Equinox

- Have her revolve a quarter-turn around the Sun. Her tilt is still pointed to the same spot on the wall, but now her side is facing the Sun.
- **Ask:** "Look at your Equinox Belt! Which color is pointing toward the Sun?" (The green, spring-colored side). "Is your top half tilted toward or away from the Sun now? (Neither!). "Exactly! The sunlight is hitting the equator directly."
- **Choreography & Chant:** Have her stand up a little straighter (but keep the tilt!) and say: "**Neither away nor toward, a balance is restored. Equal day and night, Spring is in sight!**"

Position 3: Summer Solstice

- Have her revolve another quarter-turn. Now her body is tilted **TOWARD** the Sun (chair). Her front (representing the Northern Hemisphere) is getting all the direct "sunlight."
- **Ask:** "Now where is the top of you tilted?" (Toward the Sun). "Are we getting lots of direct, strong sunlight now?" (Yes!).
- **Choreography & Chant:** Have her stretch her arms out wide and say: "**Tilted toward the sun's great heat. Long, bright days, oh what a treat! It's Summer Solstice!**"

Position 4: Autumnal (Fall) Equinox

- Have her revolve the last quarter-turn back to the starting side. Again, her side is facing the Sun.
 - **Ask:** "Check your Equinox Belt! What color is facing the Sun now?" (The orange/brown, fall-colored side). "And is your tilt toward or away?" (Neither!).
 - **Choreography & Chant:** Have her do a slow, graceful turn and say: "**Neither away nor toward, a gentle new accord. Equal day and night, Autumn's golden light.**"
4. **Practice:** Go through the whole dance two or three times, encouraging her to say the chants at each stop. Speed it up a little the second time to feel the flow of the cycle.

4. Assessment Methods (Formative and Summative)

1. Formative (During the dance):

- **Observation:** Does River keep her tilt consistent? This is the key conceptual hurdle. Gently correct her if she straightens up or changes her tilt direction.
- **Questioning:** Use the "Ask" questions listed in the choreography section to check for understanding at each stage.

2. Summative (After the dance - 5 minutes):

- **Teach-Back:** Ask River to be the teacher and guide you through the "Dance of the Seasons." Her ability to explain the positions and the importance of the tilt will demonstrate her understanding.
- **Quick Doodle:** Give her a piece of paper. "Can you draw me a quick picture of the Earth in the Summer Solstice? Show me where the Sun is and which way the Earth is tilted."

5. Differentiation and Inclusivity

- **Support:** If the concept of the constant tilt is difficult, you can physically orient her at each step. Simplify the chants to just the key words (e.g., "Winter: Tilted Away," "Summer: Tilted Toward," "Spring/Fall: Tilted Sideways").
- **Extension/Challenge:** While she is in the Summer Solstice position, ask, "If we are getting all the sun up here in the Northern Hemisphere, what do you think is happening on the bottom half of the Earth (the Southern Hemisphere)?" Guide her to understand that the seasons are opposite.

6. Wrap-Up and Conclusion (5 minutes)

Praise River for her fantastic performance as Planet Earth. Ask her one final time: "So, what are the two main things that cause our seasons?" Guide her to the answer: **1) The Earth's revolution around the sun, and 2) its constant tilt!** Connect it back to the real world by saying, "Next time you feel the days getting shorter in the fall, you can picture exactly where you are in your dance around the sun."