Sun-Sational Observations
By Celia de la Loza

**NGSS:** Space Systems—Patterns and Cycles 1-ESS1-1 Use observations of the Sun to describe patterns that can be predicted

**Summary**

Sun-sational Observations is a whole class science lesson delivered in two parts. The first part involves four tasks: a circle map, a wonder statement, read aloud, and Simon Says game. Students complete a circle map about the Sun to tap into their prior knowledge. Class discussion leads to the wonder statement, “I wonder how the Sun moves?” The read aloud uses content specific vocabulary to explain how the Sun moves across the sky every day. The Simon Says game increases understanding of the content specific vocabulary through kinesthetic movement. Students return to the wonder statement and describe how the Sun moves across the sky (written, oral, drawing).

The second part involves four tasks: a second wonder statement, demonstration, pair work, and an independent formative assessment. The teacher prompts students to think, “Why do you see the Sun move across the sky?” The teacher leads a demonstration of the Earth’s rotation to help students understand the Sun appears to move because the Earth rotates in front of it. The Earth’s rotation gives the illusion the Sun is moving. In pairs, students gain understanding through repeated demonstrations, Think-Pair-Share, and cloze reading. Independently on a written formative assessment, students answer both wonder statements, “When you look outside, describe how you see the Sun move in a day? Explain why you see the Sun moving in this way. What do you know about the Sun and Earth that can explain this?” Students can answer with a drawing or orally as well. The class evaluates a few work samples, to help students determine if they need to clarify or elaborate their answer.

**Overview of the Formative Assessment Process in This Resource**

**Clarifying Intended Learning**

- **Learning Goal:** Students will be able to understand the Sun SEEMS or APPEARS to move across the sky every day and explains why this happens.
- **Success Criteria:**
  - I can describe that the Sun rises in the morning, shines the brightest in the afternoon, and sets in the evening.
- I can explain the Sun appears to move across the sky every day and I can predict this pattern.
- I can explain Earth rotates in front of the Sun giving the illusion the sun is moving.

Elicit Evidence:
Evidence is elicited throughout the lesson via whole group discussions and questioning. Students will demonstrate their understanding of key vocabulary through kinesthetic movement and pair work. Students will demonstrate understanding the Sun rises, shines directly, and sets and that this movement across the sky is an observable pattern that repeats through verbal discussions in pairs. Students will demonstrate understanding with a drawing or written explanation as they independently answer the first wonder statement, “I wonder how the Sun moves?” Students will demonstrate understanding of the vocabulary word rotate through kinesthetic movements. Students will spin their body in a fixed position. Students will demonstrate understanding the Earth rotates in front of the Sun through kinesthetic movements in pairs as they hold the flashlight and globe. Students revisit both wonder statements, “I wonder how the Sun moves? And why do I see this?” and as they Think-Pair-Share, they demonstrate understanding that the Sun appears to move, but it is Earth rotating. In pairs, students demonstrate understanding of content specific vocabulary and the standard during cloze reading. Students demonstrate understanding independently with a drawing or written explanation.

Interpret Evidence
The teacher interprets students’ circle maps to help generate a wonder statement. After the read aloud, the teacher evaluates pair share engagements and verbal explanations to check for key vocabulary (rise, set, across, morning, afternoon, evening, sky, rotate, cycle). The teacher also checks understanding that the Sun’s movements repeat and can be predicted. After the “Simon Says” game, the teacher interprets kinesthetic movement to check for understanding of the vocabulary “rise”, “shine directly”, and “set”. After the “Simon Says” game, students return to their wonder statement written on the back of the circle map. The teacher checks that students understand “In the morning, the Sun rises. In the afternoon, the Sun shines brightly. In the evening, the Sun sets.” After the demonstration of the Earth’s rotation in front of the Sun, the teacher interprets the student’s kinesthetic movement to evaluate understanding of rotation. The teacher evaluates small group demonstrations accompanied by verbal explanations that the Sun rises when the Earth rotates towards the Sun, the Sun shines directly when the Northern Hemisphere directly faces it, and the Sun sets when the Earth rotates away from it. The teacher leads students to revisit the initial wonder statement, and asks students, “I wonder how the Sun moves?” Students Think-Pair-Share. The teacher checks students understand the Sun doesn’t really move. It appears to be moving, but it is really the Earth rotating. The teacher evaluates understanding of key vocabulary of Earth’s rotation and the three different ways the Sun appears to move through cloze.
reading in pairs. On the individual assignment, the teacher evaluates the student’s ability to describe the observations of the Sun in the sky and explain why they see the illusion the Sun is moving across the sky by giving a point for each correct answer for a total of two points possible. The teacher evaluates a student’s affective domain by their engagement throughout the lesson and how students reflect about their own work after the whole class evaluates the clarity and thoroughness of a few work samples.

**Act on Evidence**

While students write their knowledge on a circle map, the teacher will circulate the room and Act on Evidence by prompting students to consider the wonder statement, “I wonder how the Sun moves?” After the read aloud, the teacher notes students’ ability to apply key vocabulary in their explanations as they Think-Pair-Share. The teacher provides sentence frames to provide a model for students. During “Simon Says” the teacher will note the accuracy of body movements. When students return to their “I wonder” question, the teacher circulates the classroom skimming responses and making note of student understanding. During the rotation demonstrations, the teacher listens, observes, and notes pair demonstrations of the Earth’s rotation and Sun’s position. The teacher will correct misconceptions. The teacher encourages students to revisit the initial wonder statement. The teacher will randomly select three students to answer the two wonder statements, “I wonder how the Sun moves? And why do I see this?” Students explain that the Earth rotates on its axis making it seem like the Sun is moving. The teacher provides sentence frames to model correct language and expression. “The Sun looks like it’s moving across the sky because ____________.” During pair work in which students complete cloze reading, the teacher will note accurate answers and correct any misunderstandings. The teacher will help students evaluate how accurately the drawings support the written explanations in the final individual assignment. The teacher reminds students of the text features that support text passages. The teacher allows students the freedom to decide whether they are going to improve their answer or not.

**Feedback**

During the circle map activity, the teacher circulates around the classroom making observations of what students know. The teacher may need to ask the class, “Do you know how the Sun moves?” This question may lead to prompting students to form the wonder statement, “I wonder how the Sun moves?” During the read aloud, the teacher randomly selects three students and affirms correct observations of the Sun’s movements. The teacher may ask yes/no questions to increase confidence and engagement. The teacher models language using sentence frames for students if needed. During “Simon Says”, the teacher praises correct body movements (rise, shine directly, set). When students demonstrate rotation with their body, the teacher checks they are spinning their body in a single spot and not spinning around an external object or person (students may spin on a single foot, or on their bottoms). After demonstrations with the flashlight and globe, the teacher praises understanding that it appears as
though the Sun moves, but it is Earth rotating. She checks for opportunities to conduct additional demonstrations if needed to increase understanding. During pair work, the teacher praises correct sentence completions and checks for opportunities to reteach the key vocabulary or concepts. During the individual assignment, the teacher gives the student one point for describing the Sun’s movement through a drawing or with a written statement or both. The teacher also gives the student one point for explaining why the Sun seems to move across the sky again with a drawing or with a written statement. Peers evaluate a few work samples and provide gentle feedback before students make improvements to their work.

**Instructional Moves**

Explain that scientific investigations begin with observations. We use our five senses to make observations. Today’s objective will require students to use their sense of vision to explain how the Sun moves across the sky and that it repeats this pattern every day. The teacher states the objective, “I can describe how the Sun moves in a day and explain why I see this.” Students chorally read the objective and then take turns restating the objective with their neighbor. Complete a circle map to tap into their prior knowledge. Students complete an individual circle map, while the teacher creates a whole class circle map. Give students ample time to think about what they know about the Sun. Ask students “Do you know how the Sun moves?” in order to generate the wonder statement, “I wonder how the Sun moves?” Students write the “I wonder” question on the back of their circle map.

Read pages 2–5 in *The Little House* and ask students to listen to how the Sun moves as they look at the illustrations. Ask students to pair-share what they heard. Provide images (*Science in a Box, The Mailbox*, page 135) along a sentence strip. Add sentence frames: In the morning, I see the Sun ________. (rises) In the afternoon, the Sun _____________. (shines directly) In the evening, the Sun _________. (sets) Connect both ends of the sentence strip to show the Sun’s movements repeat every day and are cyclical. Encourage students to predict what the Sun will do the next day. Ask student to think-pair-share as they answer, “How does the Sun move?”

To reinforce vocabulary, lead a “Simon Says” game. Students stand up “to rise”. Students form a circle with their hands over their heads for “shines directly”. Students touch the floor “to set”.

Students return to their “I wonder” statement on the back of their thinking map, and construct a written answer for it.

Encourage students to think about why they see the Sun move across the sky. Generate a second wonder statement, “I wonder why I see the Sun move across the sky?”

Use a globe to explain the Earth rotates on its axis. Encourage students to demonstrate rotation by asking them to spin around in place using their own body. Then use the
globe and flashlight to explain and demonstrate why we see the Sun rise, shine directly, and set. Provides the following sentence frames: When the Earth ___________ towards the sun, I see the Sun ___________. When the Earth faces the sun, I see the Sun _______________. When the Earth_____ away from the Sun, I see the Sun _______________. Give one student a kid’s flashlight (or you can use a yellow paper circle) and give the partner a mini globe ball (or a blue paper circle) to represent the Sun and Earth. They demonstrate the Earth’s rotation and Pair-Demonstrate-Share how the Earth rotates making it seem the Sun is moving. Students take turns being the Sun and Earth and explaining why it appears the Sun moves across the sky. Provide the following sentence frame, “I see the Sun move across the sky because______.” Encourage students to revisit the initial wonder statement, “I wonder how the Sun moves? And why do I see this?” Students Think-Pair-Share their answers. Students answer that it seems like the Sun is moving, but it is really the Earth rotating. In pairs, students complete a worksheet titled “Position of the Sun” (page 132 from Science in a Box by The Mailbox) in which they complete sentences with key words about how the Sun appears to move across the sky.

To check for individual understanding, students complete the “The Sun-sational Sun” worksheet. Allow students to draw, write, or verbally describe how the Sun appears to move across the sky and explain why they see this.

In whole group discussion, peers review the accuracy of the drawings and explanations and provide gentle feedback.

You may consider teaching part one, one day; and part two on the next day.

**Instructional Task Description**

**Differentiation**

*For English Language Learners*

For Emergent Proficiency Level: Asking students Yes/No questions or thumbs up/down increases student engagement. Provide verbal (sentence frames and vocabulary) and procedural scaffolds (pair work, Think-Pair-Share). Provide comprehensible input through visuals from The Little House, images from Science in a Box, The Mailbox, and a demonstration with globe and flashlight.

For Expanding Proficiency Level: Sentence frames provide a model for correct language. Graphic Organizers or Thinking Maps increase student engagement and understanding of key concepts. Think-Pair-Share and Pair-Demonstrate-Share provide students with opportunities to express their ideas verbally before writing them.

For Bridging Proficiency Level: Provide open ended questions, Think-Pair-Share, and graphic organizers.
For Kinesthetic Learners - "Simon Says" helps them understand key vocabulary. The demonstrations of spinning with your body in place helps them understand the Earth's rotation. Opportunities to write increase engagement.

For Auditory Learners - The read aloud and oral pair-share will engage them. As an extension activity, the song, “The Solar System in Motion” will increase their understanding, and the poem, “Sunrise and Sunset” will aid in their understanding.

For Students with Disabilities - Think-Pair-Share and Pair-Demonstrate-Share provide support and hence increase engagement. The lesson is simplified into manageable, smaller, and achievable parts in order to maintain student engagement. Sentence frames model language. There are opportunities to learn in whole group, small group, with pairs, and one-to-one support.

For Emergent Readers - Chorale reading sentences, song, and poem increase confidence and provide support. Sentence frames accompanied by visuals provide support.

Additional Comments and Considerations from the Author(s)

This resource has been designed for whole class instruction, but can be adapted for small group work. The formative assessment process provides the teacher with opportunities to check for understanding and determines reteaching or extended learning opportunities. The formative assessment process also provides students with opportunities to monitor their progress and evaluate their own learning.

The teacher can extend this project with a paper model.

The teacher can also check speaking skills, dialogue, and content understanding by filming students. Students can be taught to video tape themselves engaging in a dialogue through Flipgrid, a digital resource. Students view their videos instantly and evaluate their speaking skills, ability to sustain a conversation, and content knowledge. The teacher can evaluate videos as additional formative assessment.

Student Materials and Additional Resources Links


*Science in a Box* by *The Mailbox*, pages 131, 132

White boards, dry erase markers and erasers, globe, flashlight, chart paper, marker, blank sheets of paper, pencils and crayons, sentence strips, yellow and blue construction paper, small kids’ flashlights and Earth globe balls from Lakeshore School Supply.
The teacher-created formative assessment, “The Sun-sational Sun” by Celia de la Loza

101 Science Poems & Songs for Young Learners, page 27, page 23

Flipgrid Digital Resource

California Department of Education • October 2019