Science K-2: Sun 101

Intended Audience: Students with significant cognitive disabilities

# **Standards:**

SC.K.E.5.3 Recognize that the Sun can only be seen in the daytime.

SC.K.E.5.6 Observe that some objects are far away and some are nearby as seen from the Earth.

SC.K.N.1.2 Make observations of the natural world and know that they are descriptors collected using the five senses.

SC.1.E.5.4 Identify the beneficial and harmful properties of the Sun.

SC.1.N.1.2 Using the five senses as tools, make careful observations, describing objects in terms of number, shape, texture, size, weight, color, and motion, and compare their observations with others.

SC.2.E.7.2 Investigate by observing and measuring, that the Sun’s energy directly and indirectly warms the water, land and air.

# **Learning Objectives:**

 1. Students will understand that the Sun is hotter at different times of the day.

 2. Students will identify two ways that the direct Sun can be damaging.

 3. Students will understand that the Sun creates heat in objects on the Earth.

# **Vocabulary:**

1. Sun: the star that the Earth moves around and that gives the Earth heat and light

2. Earth: the planet on which we live

3. heat: to cause something to be warm or hot

4. rays: a line of light that appears to radiate from a bright object, i.e. the Sun

5. Solar system: the Sun and the planets that move around it

6. star: objects in space that are made of burning gas and that look like points of light in the night sky

7. sunscreen: a lotion that you put on your skin to prevent sunburn by blocking out some of the sun’s rays

# Materials:

* Prepare prior to instruction: an observation tool/organizer to use while observing points of the Sun throughout the day
* Prepare prior to instruction: KWL chart
* Prepare prior to instruction: sequencing cards/photos/sentence strips that show the location of the Sun during the day
* Prepare prior to instruction: visual supports for informational text
* Song: ["I'm So Hot" The Sun song by The Storybots](https://www.youtube.com/watch?v=t-kzdR93bqw)
* Video: [Tutorial and resources for the Sun](http://www.floridastudents.org/PreviewResource/StudentResource/174847)
* Informational text: [The Sun and Us: From Morning to Night](https://www.readworks.org/article/The-Sun-and-Us/ce7d6b87-a7d7-463f-a808-ba84e89a67ed#!articleTab:content/contentSection:d67c2a8c-dcd0-45ef-bbad-7f27f2610656/)
* Informational text: [Stay Safe in the Sun](https://www.readworks.org/article/Stay-Safe-in-the-Sun/5766de7a-8c04-4d9c-b9d9-4bc8819672f0#!articleTab:content/)
* Science journals

# **Essential/Guiding Questions:**

 1. Why is the Sun hotter at certain times of the day?

 2. How can the Sun’s rays be damaging?

 3. How does the Sun create heat in objects on Earth?

# Lesson Presentation:

**Activating Prior Knowledge:**

1. Using a KWL chart, investigate what students already know about the Sun.

2. List 4 or 5 thoughts on the Know (K) side of the chart. Tell students that they’ll be observing the Sun and learning more about it.

3. Play the song, [The Sun Song](https://www.youtube.com/watch?v=lcXsunmdAKo), on the Smartboard.

**Modeled instruction:**

1. Engage students with the interactive video: [Tutorial and resources for the Sun](http://www.floridastudents.org/PreviewResource/StudentResource/174847) to introduce students to the Sun. Students will interact with tasks throughout the video.

2. Read the two informational texts, [The Sun and Us: From Morning to Night](https://www.readworks.org/article/The-Sun-and-Us/ce7d6b87-a7d7-463f-a808-ba84e89a67ed#!articleTab:content/contentSection:d67c2a8c-dcd0-45ef-bbad-7f27f2610656/) and [Stay Safe in the Sun](https://www.readworks.org/article/Stay-Safe-in-the-Sun/5766de7a-8c04-4d9c-b9d9-4bc8819672f0#!articleTab:content/).

3. Introduce vocabulary for each article, providing visual supports when necessary. Photos and additional video resources can be found in the Additional Resources section to further support instruction.

4. Tell students that they will learn more about the Sun when you revisit the text(s) and identify the main idea and key details.

**Supported/Guided instruction: experiment w times of day, morning noon evening night**

1. Play the song, [The Sun Song](https://www.youtube.com/watch?v=lcXsunmdAKo), on the Smartboard and reengage students with the interactive video tutorial, [Tutorial and resources for the Sun](http://www.floridastudents.org/PreviewResource/StudentResource/174847).

2. Re-read the 2 informational texts, [The Sun and Us: From Morning to Night](https://www.readworks.org/article/The-Sun-and-Us/ce7d6b87-a7d7-463f-a808-ba84e89a67ed#!articleTab:content/contentSection:d67c2a8c-dcd0-45ef-bbad-7f27f2610656/) and [Stay Safe in the Sun](https://www.readworks.org/article/Stay-Safe-in-the-Sun/5766de7a-8c04-4d9c-b9d9-4bc8819672f0#!articleTab:content/). Review vocabulary for each.

3. Have students identify the main idea and key details in each passage. Provide visual supports for each.

4. After discussing the 2 informational texts and digging deeper in to them, model some wonder statements (i.e. I wonder why it’s cooler in the morning?), and complete the Wonder (W) column of the KWL chart. Have students turn and talk to a partner or share out whole group.

5. Observation: Tell students that you are going to be making observations about the Sun over the course of the next few days/week. In whole or small groups, observe the location of the Sun at various times during the school day. For independent work, assign students task to complete at home, observing the Sun in the very early morning and in the evening. Complete the observation tool/organizer when observing points of the Sun throughout the day. Over the course of the observation period, revisit the organizer and begin discussions about Sun location in the sky and relative temperature (i.e. cooler, hotter).

6. To connect the [Stay Safe in the Sun](https://www.readworks.org/article/Stay-Safe-in-the-Sun/5766de7a-8c04-4d9c-b9d9-4bc8819672f0#!articleTab:content/) article, ask questions that relate to observations (i.e. When the Sun is highest in the sky, how could we protect our skin? What might happen if you do not wear sunscreen?)

7. After the observation period, discuss your findings and observations in whole group. Ask questions to determine understanding (i.e. When is the Sun the hottest? Why does it get cooler in the evening?)

**Independent Work:**

1. Students will sequence the location of the Sun during different times of the day.

2. In Science journals, students will write/draw their observations.

3. Observe the Sun in the very early morning and in the evening and mark it on a chart or write your observations in a Science journal.

4. Students will create the Learned (L) portion of the chart.

**Small group suggestions:**

1. Students can sort photos into 2 categories: those that show the sun/daytime and those that show moon/stars/nighttime.

2. Students can draw a picture and label it with key details about the Sun.

3. Students can read an article at their instructional or independent level about the Sun (various options listed below in Additional Resources) and show/share what they know.

4. Students can create a video presentation about sun safety and show it to peers.

# Assessment:

1. Students will demonstrate their knowledge of the Sun’s heat and location during different times of the day and can give an example of ways to protect themselves from the Sun’s harmful rays.

2. Teachers should utilize district created rubrics to score student work.

# UDL:

**Multiple means of representation:**

1. Students can write their ideas and discoveries in Science journals.

2. Students can orally share their observations and discoveries.

3. Students can draw pictures to describe and express their observations.

4. Students can use photos to show their observations.

5. Students can work individually, in pairs, or in a small group.

6. Students can work independently with peer or adult supports.

**Multiple means of expression:**

1. Expression may come in the form of verbal responses, signed responses, pointing/gestures, eye gaze, or through the use of a low or high tech device.

2. All students should have access to expressive language/technology that is appropriate for their specific need.

3. Students can use an iPad or other touch device to show similarities and differences.

4. Text to speech options are available for computers, iPads and other hand held devices. Google Chrome offers free extensions, such as Selection Reader and Select and Speak-Text to Speech, and apps, such as Text to Speech, Text to Speech with Google Drive, and TTS Reader- Unlimited Text-to-Speech.

5. Speech to text options are also available from Google. Extensions include Voice Note II-Speech to Text, Online speech recognition, and Co: Writer Universal. Voice Note II is also available as an app; Speech notes-Speech to Text Notepad is available as well.

6. Additional information about text to speech and speech to text options are available through your district Assistive Technology Department.

**Multiple means of engagement:**

1. Provide students or small groups with various places in the classroom in which to work, i.e. floor, desks, at the board.

2. Limit distractions in the work areas.

3. Encourage collaboration with peers in partners or small groups.

4. Allow students to work independently.

5. Allow students to be positioned for maximum learning engagement.

6. Provide students with additional materials, if necessary.

# Assistive Technology Recommendations:

1. All students should have a means of expressive communication and a way to be actively engaged in learning.

2. Response modes may include, but are not limited to: eye gaze, gesturing or pointing to pictures/words/phrases, signing, low tech devices (GoTalks, etc.), or dynamic devices (iPad, etc.)

3. Lesson vocabulary, photos/pictures and graphic representations should be created and/or printed prior to the lesson to provide all students with an opportunity to be engaged in discussion.

# Technology Needed:

* Smartboard, iPad

# Additional Resources:

* [Sun instructional resources from Teacher Planet](http://www.teacherplanet.com/content/sun)
* Readworks article: [The Sun](https://www.readworks.org/article/The-Sun/bf9cea6a-16cf-44d7-89e9-0220edd7916f#!articleTab:content/contentSection:c16226a0-452a-4e8e-bdf3-702e84ecf4c7/)
* Readworks article: [From Morning to Night](https://www.readworks.org/article/The-Sun/bf9cea6a-16cf-44d7-89e9-0220edd7916f#!articleTab:content/contentSection:c16226a0-452a-4e8e-bdf3-702e84ecf4c7/) (paired text with The Sun)
* Informational website: [Sun Facts for Kids](http://www.sciencekids.co.nz/sciencefacts/space/sun.html)
* Song: [The Sun Song](https://www.youtube.com/watch?v=lcXsunmdAKo)
* Book: Curious George Discovers the Sun, by H. A. Rey
* Video Read Aloud: [Curious George Discovers the Sun](https://www.youtube.com/watch?v=cSxGu0PekoQ)

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