# Kindergarten

## Sample Science Learning Plan

### Big Idea/Topic

Patterns: Day and Night Sky

### Standards Alignment

**SKE1.** Obtain, evaluate, and communicate observations about time patterns (day to night and night to day) and objects (sun, moon, stars) in the day and night sky.

- a. Ask questions to classify objects according to those seen in the day sky, the night sky, and both.
- b. Develop a model to communicate the changes that occur in the sky during the day, as day turns into night, during the nights and as night turns into day using pictures and words. *(Clarification statement: Students are not expected to understand the tilt of the Earth, rotation or revolution.)*

**Crosscutting Concepts:** Patterns, Systems and system models

### Other Content Areas:

**ELAGSEKW2:** Use a combination of drawing, dictating, and writing to compose informative/explanatory text in which they name what they are writing about and supply some information about the topic.

**ELAGSEKW3:** Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.

**ELAGSEKW8:** With guidance and support from adults, recall information for experiences or gather information from provided sources to answer a question.

**ELAGSEKSL3:** Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

**ELAGSEKSL5:** Add drawings or other visual displays to descriptions as desired to provide additional detail.

**SSKH3** Correctly use words and phrases related to chronology and time. *(While not used in this segment to discuss historical events and figures, the language of this standard is used in looking at patterns over time.)*

**SSKG3** State the street address, city, state, and country in which the student lives.
**Instructional Design**

**Teacher Note:** For this instructional segment, knowing young children may be doing this at home, we are focusing more on the nighttime sky to avoid having students look directly into the sun. Do remind students that they should never look directly at the sun. We also hope that all students will have access and opportunities to look at the nighttime sky. Be aware that students who live in a big city or area with bright lights will have a limited view of stars. The Earth, Moon, Sun, other stars, and planets have predictable patterns of movement. In kindergarten, we want students to start noticing and naming the objects they see in the sky and to notice these patterns. We want them to also understand that some events on Earth occur in cycles, like day and night. Consider sharing the [family/caregiver letter](#).

**Phenomenon:** Changes occur in the sky during the day, as day turns to night, during the night, and as night turns to day. Stars appear to move in predictable patterns.

**Engage**

**Plugged:** Have students watch a [time-lapse video](#) of day and night.

**Unplugged:** Share pictures of change from day to night.

Discuss what they notice. Encourage them to ask questions about what they wonder and record those questions. Use those throughout your study.

Read a book about day and night. A possible read aloud is, [Good Day. Good Night](#) by Margaret Wise Brown. **Unplugged:** Check school and local libraries to share books with families.

Have student orally share, write, or draw activities they do in the daytime and those they do at night.

**Explore**

Have students view pictures of objects in the sky and sort as those they see in the daytime, nighttime, or sometimes both.

Have students make observations of stars at multiple times in the evening (at least 3 within an hour apart) and draw a picture of four or five starts that seem to make a shape. Record on handout provided. Have students compare the two drawings to find a pattern in the movement of the stars and changes in positions of stars relative to Earth. Have them repeat this for multiple nights.

Teacher Notes: There is not a right or wrong answer. Encourage students not to select too many stars for their pattern. 4-5 will be enough. Make sure they are selecting stars in the same region of the sky. Have two model drawings to use. Students can use a landmark on the horizon to help them determine where their stars are located, if they are moving, etc. The core idea is that objects in the sky appear to move in predictable ways. The spinning of Earth causes stars to appear to move during the night. It is also appropriate to let students know that the Sun is a star. They may be curious as to why we see it during the day. See the “elaborate section” if this occurs. Students are not expected to understand the tilt of the Earth, rotation, or revolution.
**Explain**
Students construct an explanation that stars move in predictable patterns. Questions to initiate discussion might include:

1. What objects do you see in the daytime sky? Nighttime sky? Both?
2. How did the position of your star group change during the time you watched it?
3. What patterns did you notice when you observed the stars?

Help guide students to notice patterns. You may want to share your pictures and describe what you observed. Allow students to revise their own explanation that stars move in predictable patterns.

If student need more understanding, or if you have very bad weather during the night and students are not able to make observations, you may use this [video](#) for **plugged** students.

**Elaborate**
So although stars are always in the sky, we only see them at night. Our Sun is much closer to us/Earth, so it appears brighter than the other stars. Students have likely observed that the Sun appears to move across the daytime sky in a predictable pattern. To understand that the other stars are out during the day but just not visible due to the brightness of the Sun, have them do a simple exploration. Students should turn off the lights in the darkest room in their home. Have them use a flashlight or cellphone light to shine on a wall in the room. Let that represent the stars. Then, keeping their flashlights on, turn on the overhead lights. Let the overhead lights represent our closest star, the Sun. What do they notice about the light from their flashlight on the wall now? Is it as easy to see?

Students will learn more about stars having different sizes and brightness in 2nd grade.

**Evaluate**
Show students a variety of [pictures](#) and have them sort as night, day, or both. Students will model the changes that occur in the sky by drawing pictures of a group of stars at multiple times over a couple of days. If using journals with students (electronic or hard copy), consider having student complete the following statements:

1. Changes that occur in the day sky are
2. Changes that occur as day turns to night are
3. Changes that occur in the night sky are
4. Changes that occur as night turns to day are

Students may develop a series of drawings that show a scene of their choosing (including the sky), changing from day to night/night to day. Depending on the resources of students, you may allow them to take photos and share. Students may also put a series of photos in order from day to night and night to day.
Checklist:

Standards:

SKE1. Obtain, evaluate, and communicate observations about time patterns (day to night and night to day) and objects (sun, moon, stars) in the day and night sky.

   a. Ask questions to classify objects according to those seen in the day sky, the night sky, and both.
   b. Develop a model to communicate the changes that occur in the sky during the day, as day turns into night, during the nights and as night turns into day using pictures and words. *(Clarification statement: Students are not expected to understand the tilt of the Earth, rotation or revolution.)*

Checklist:

☐ Ask questions about objects in the sky.
☐ Develop a model to describe the changes in the sky during the day and at night.

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**Evidence of Student Success**

Students will be able to describe that they saw the stars in about the same place both nights when they observed them. They should also be able to share that they noticed when they checked back each hour the stars were in a slightly different place. An appropriate student response: *I watched a group of stars X times during the night. It looked like the stars moved to another spot. I think this happened because they move in the same way every time.*

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**Student Learning Supports**

The goal for science education in the state of Georgia is as follows: All Students, over multiple years of school, actively engage in science and engineering practices and apply crosscutting concepts to deepen their understanding of the core ideas in these fields.

The learning experiences provided for students should engage them with fundamental questions about the world and with how scientists have investigated and found answers to those questions. This lesson includes the disciplinary core ideas, science and engineering practices and crosscutting concepts to actively engage students in exploring science concepts with real world topics. As part of the vision, we must support the inclusion of all students in science learning.

Some general strategies to include all students in the learning process of science are as follows:

- Provide consistent and positive feedback.
- Keep directions brief and clear.
- Make sure parents and students know schedules, due dates, requirements, expectations, and how assignments/tests are going to be collected.
- Share evaluation results in a timely manner to students and parents.
- Package assignments in a way that students know the sequence, what is required, when it is required, what is available as choice and what is for fun.
- Provide/encourage organizational strategies such as where to work, store work, when and where to turn in assignments, graphic organizers, etc.
- Provide reminders of important dates and requirements.
• Go over notebook and journal ideas and share your entries with students so they can see what you expect.
• Allow dictation and/or text to speech software programs and tools.
• Check in with students by phone or online to answer questions, give reminders, and check progress.
• Provide parents with updates on progress and upcoming assignments. Communicate often.
• Provide resources that students can access offline.
• Allow students to give information orally or in drawings.
• Model expectations and demonstrations in video/online/phone.
• The teacher should have students match letter prior to reading or writing to remind them of the alphabet.
• The teacher can have students identify words that they know in any text that they are reading.
• The teacher can provide students with sentence frames to assist students frames to help students get started writing.
• Provide students with the opportunity to interact with numbers.
• The teacher should provide multiple ways for students to gain and show their knowledge.

Some strategies specific to this lesson are as follows:
• The teacher may need to show the video more than once to allow students to make observations.
• The teacher should have clear and consistent guidelines for discussion. This should help students feel more comfortable contributing to the discussion and help all students feel that their voices are valued.
• The teacher should record student questions in a location that can be referred to as students make more observations.
• The teacher should consider how students are sharing their observations and knowledge. It is important to provide students with multiple ways to share their knowledge such as drawing, verbally explaining or modeling.
• The teacher should consider the timing of using this distance learning plan. This plan may be more helpful in the fall or winter when the days are shorter so that students have more opportunity to observe the night sky.
• The teacher should allow students an opportunity to share the reasoning behind the way they sorted the photos in the card sort.
• Students may not immediately recognize patterns. The teacher may need to help students recognize patterns by asking questions and allowing students to voice their ideas about the patterns that they see.
• The teacher should consider showing videos, images, timelapse simulations of the night sky and encouraging observations of the night sky. This should assist students in seeing the material in multiple formats.
• The teacher should consider modeling with the flashlight and overhead light multiple times to allow students to make observations. Then allow students to discuss what they notice, think and wonder.
• The teacher should ensure that students are given the opportunity to share their knowledge in multiple formats. These formats could include drawing, verbally explaining or modeling.

## Engaging Families

- **Twinkle Twinkle Letter Stars**
- Consider visiting a planetarium, observatory, or dark area in Georgia following CDC safety recommendations.
- Families with access to the internet may enjoy an online planetarium experience.
- Families with access to the internet may also enjoy participating in citizen science projects such as Globe at Night. There are two related phone apps: Loss of the Night and Dark Sky Meter that may also interest families.
Dear Family/Caregiver:

The Earth, Moon, Sun, other stars, and planets have predictable patterns of movement. In kindergarten, we want students to start noticing and naming the objects they see in the sky and to notice their patterns of movement. We want them to also understand that some events on Earth occur in cycles, like day and night. They may observe that the Sun appears to move across the sky from east to west. It is okay for young students to make those simple observations. You might discuss how the Earth is spinning, but they will begin to develop those concepts more fully as they progress through elementary school. Students are not expected to understand the tilt of the Earth, rotation, or revolution in kindergarten, but certainly some students may be ready to explore it more.

As students make observations of the sky, please make sure they do not look directly at the sun as this could damage their eyes.

You can help your students notice the changes from day to night and night to day. In this study, students will be asked to track a set of stars by observing them several times a night (at least an hour apart) for at least two nights.

Enjoy!
Pictures of Objects in the Sky

Sun

Stars at Night
Pictures of Objects in the Sky

Moon

"Daytime Moon" by alana sise is licensed under CC BY 2.0
Pictures from Morning to Night

This Photo by Unknown Author is licensed under CC BY-NC-ND
Pictures from Morning to Night
Name ______________________________

My address
Street:
City:
State:
Country:

**Night 1 Date:**
Draw a picture of a group of stars you see in the night sky at 3 different times in one night. Please record the time of your observation.

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**Night 2 Date:**
Draw a picture of a group of stars you see in the night sky at 3 different times in one night. Please record the time of your observation.

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