

WEEK 8 Lesson 1

Science and Engineering: Charting Daylight
Synthesizing Journal Work

S & E Big Ideas	Throughout the year the amount of daylight changes. The change in daylight coincides with the changing seasons.
S & E Guiding Question	What can we learn from all the data we have collected in our observations of the sky?
Content Objective	I can collect data about the weather. (1-ESS1-2) I can create a record of the weather that includes important information. (1.MD.C.4)
Vocabulary	chart: a way to organize information atlas: a book of maps or charts that tells information about a specific area increase: to have more of something decrease: to get less of something
Materials and Preparation	<ul style="list-style-type: none"> ● Monthly Daylight charts, one for each partnership ● Daylight Chart, one for each child ● Science Journals ● chart paper and markers
Opening 5 minutes	<p><i>All year, we have been tracking the hours of daylight each day. We have seen the amount of daylight change during our school year. Today we will look more closely at this data. We will chart which months had an increase of daylight, a decrease of daylight, or maybe even both happened in one month!</i></p> <p><i>Today you will work with a partner to look at the data. We will use the process called, I Notice and I Wonder.</i></p> <p>Model the I Notice and I Wonder Protocol: Assign the children a partner. Hand out Monthly Daylight charts and Science Journals. Display the first month (September) on the board. Have children flip to September entries in their journals.</p>

	<p><i>What do you notice about the hours and minutes of daylight?</i> Invite children to respond and record their noticings on chart paper.</p> <p><i>What are you wondering?</i> Invite children to respond and record their questions on chart paper.</p>
Investigation 15 minutes	<p>In their partnerships, children will continue the protocol for December and May will make their own observations about the data on the Daylight Charts.</p> <p>To complete the Daylight Charts, each child cut out the three suns on the bottom of the chart page. They will glue the sun into the appropriate column (Increased Sunlight, Decreased Sunlight, or Both Increased and Decreased) next to each month (September, December, and May).</p>
Discussion	<p>Discussion prompts (could also be used during the previous whole group/partnership discussions):</p> <p>Ask the children,</p> <ul style="list-style-type: none"> ● What do you notice about the amount of daylight in September? ● What season is September in? ● What other changes do we notice in our environment in September? ● What do you notice about the amount of daylight in December? ● What season is winter in? ● What other changes do we notice in our environment in December? ● Why do you think December has both a decrease in daylight and an increase? (If you have not introduced the winter solstice, you can explain this transition to students). ● What do you notice about the amount of daylight in May? ● What Season is May in? ● What other changes in our environment do you notice in May?
Closing	Facilitated a conversation to synthesize the children’s understanding of how daylight changes throughout the year and the impact we observe with these changes.
Standards	<p>1-ESS1-1: Use observations of the sun, moon, and stars to describe patterns that can be predicted</p> <p>1.MD.C.4: Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.</p>
Ongoing assessment	Check for understanding in the children’s responses.

WEEK 8 Lesson 2

Science and Engineering: Measuring Time
Making Sundials

S & E Big Ideas	People have been measuring daylight for thousands of years. Today, we call this telling time.
S & E Guiding Question	How can you tell time using the sun?
Content Objective	I can use observations of the sun to describe the time.
Vocabulary	<p>Earth’s rotation: The Earth rotates each day. It takes about 24 hours for the Earth to make 1 rotation.</p> <p>sundial: A tool that is used to measure time by using the movement of the Earth and the location of the sun in the sky.</p>
Materials and Preparation	<ul style="list-style-type: none"> ● Sci Show-Making a Sundial ● paper plate, one per group ● pencil, one per group ● glue stick, one per group ● 1 bendy straw, one per group ● 1 compass, one per group ● 1 pair of scissors, one per group ● 1 roll of tape, one per group ● Sundial Template, one per group ● Science Journals, one per child <p>Children will work in small groups. Prepared these groups ahead of time.</p> <p>It is important to conduct the experiment on a sunny day.</p>
Opening 2 minutes	<p>Explain to the children that for thousands of years, people have been measuring daylight. Before there were clocks, watches, computers, and smartphones, people developed a way to measure daylight and to tell time.</p> <p style="text-align: center;"><i>Today we will make a sundial. A sundial is a tool that is used to</i></p>

	<p><i>measure the change in daylight. We call this time. We can tell time by the movement of the Earth and the location of the sun in the sky. Let's watch a video to learn more about sundials and how to make one.</i></p>
<p>Investigation 13 minutes</p>	<p>Watch the video as a whole group.</p> <p>Put children into small groups and pass out the materials. Each small group will build a sundial.</p> <p>Directions for building a sundial:</p> <ul style="list-style-type: none"> ● Cut out the sundial template and glue it to a paper plate. ● Poke a hole through the center of the plate using the pencil. ● Push the straw through the hole, and tape the short end underneath to hold it in place. ● Take the sundial outside on a sunny day at noon and place it in a flat, sunny area. ● Point the sundial north using the compass, and tilt the straw slightly north so it casts a longer shadow. ● Observe the sundial over a few hours. The shadow of the straw tells you the time!
<p>Discussion 5 minutes</p>	<p>Ask questions about the experiment:</p> <ul style="list-style-type: none"> ● What did you notice? ● What do you wonder? ● How does a sundial work to tell time?
<p>Closing 5 minutes</p>	<p>Children write their observations in their Science Journals. Conduct a short Science Circle to synthesize ideas.</p>
<p>Standards</p>	<p>1-ESS1-1 Use observations of the sun, moon, and stars to describe patterns that can be predicted.</p>
<p>Ongoing assessment</p>	<p>Check for understanding in the children's responses.</p>

<p>Notes</p>
