

Grade 1 Unit 1 The Sky Above

Phenomena Wall

Note: The Investigative Phenomenon column is a resource for the teacher and should not to be shared with students.

1-ESS1-1. Use observations of the sun, moon, and stars to describe patterns that can be predicted. [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.] [Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.]

1-ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.]

| Anchor Phenomenon: The sky changes in a 24 hour time period. (Dubai 24 Hour Timelapse) | | | | | |
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| Essential Question: How can we use patterns in the sky to help us? | | | | | |
| Investigative Phenomenon | Question to Investigate | What We Did | What We Figured Out | Connection to Phenomenon | Questions We Now Have |
| Lesson 1 The sun, moon and stars are objects in the sky that change. | What is in the sky? | We observed the sky. We compared our observations to pictures of the sky. | We can see the sun, moon, and stars in the sky. | We saw the sun and moon in the sky in Dubai. | List questions students provide. |
| Lesson 2 (5 days) The sun moves in a pattern across the sky. The position of the sun affects the length, shape, and size of shadows. | What does the sun do? | We conducted a shadow investigation. We read Sun! One in a Billion and The Sun is Kind of a Big Deal . We watched Following the | The sun moves in a pattern across the sky. The sun appears to move from east to west. The shadows moved when the sun | The sun's movement causes shadows to change. The buildings' shadows are long in the morning and afternoon. They are shorter at | List questions students provide. |

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| | | Sun. | moved. Shadows are longer in the morning and afternoon and shorter around lunch. | noon. | |
| Lesson 3 A clock helps us tell time. | How do we know what time it is? | We compared a digital clock to an analog clock. We practiced telling time. We gathered data on San Diego's sunrise and sunset times over a week. | The hands on an analog clock tell us the time (short hand - hour, long hand - minutes). The numbers on a digital clock tell us the time (numbers before the colon - hours, numbers after the colon - minutes). The sunrise and sunset time changes each day. | We know that the sun is in the sky in the morning and afternoon and the moon is in the sky at night. We are unsure of the exact time in the video. | List questions students provide. |
| Lesson 4 Shadows help us tell time. | How can we tell time without a clock? | We created a sundial. | We can use shadows to help us tell time. The sun moves in a pattern across the sky and creates shadows. The direction and length of the shadow help us determine the time. | When the shadows are longer, we know it is near the time of sunrise and sunset. When the shadows are shorter, we know it is near noon. | List questions students provide. |
| Lesson 5 The amount of sunlight is different at different times of year. | How can we tell what time of year it is? | We analyzed data on the San Diego Sunrise and Sunset Times and San Diego Average | We can use the hours of daylight, the temperature, and the seasons to tell what time of | If we knew the time of the sunrise and sunset and the temperature throughout the day, we might | List questions students provide. |

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| | | Monthly Temperatures graphs. | year it is. We know there are more hours of daylight in the summer in San Diego. There are less hours of daylight in the winter in San Diego. | be able to guess the time of year. | |
| Lesson 6 San Diego uses daylight saving time. | Is daylight saving time helpful for me? | <p>We created our daily schedules and thought about how daylight saving time affects our schedules.</p> <p>We watched a video about the pros and cons of DST.</p> <p>We made an argument of whether we should keep or end DST.</p> | <p>San Diego uses daylight saving time.</p> <p>People have different opinions about daylight saving time.</p> | We shared what we think children in Dubai are doing throughout the video. | List questions students provide. |
| Lesson 7 The moon appears to change. | What does the moon do? | <p>We recorded observations of the moon in our Moon Observation Notebooks.</p> <p>We read Moon! Earth's Best Friend.</p> <p>We made a model of the moon, earth, and sun.</p> | The moon reflects the sun's light. The moon orbits the Earth. The moon has phases. There is a pattern in the moon phases. The moon appears to grow bigger and smaller each month. | <p>The moon moves across the sky in the same direction as the sun.</p> <p>The light we see on the moon is reflected from the sun.</p> | List questions students provide. |
| Lesson 8 Stars come out at night. | Why do the stars come out at night? | We watched Mystery Doug's video. | The stars come out at night because the sun's light | There is too much light from the city to see the stars | List questions students provide. |

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| | | We created stars with a flashlight. We used a second flashlight to act as the sun. | isn't out shining the stars. During the day, the sun is too bright and out shines the stars. | in the video. | |
| Lesson 9 Light pollution affects us. | How many stars can we see at night? | We became citizen scientists. We conducted a Night Sky Investigation. | (Claim of whether light pollution is a problem in your community or not.) | Light pollution from the city causes the stars to not be seen in the video. | List questions students provide. |

Causal Explanation of Anchor Phenomenon

Note: The causal explanation is what we hope students will be able to explain about the anchor phenomenon by the end of the project. This should not be shared with students. It is for teachers to understand what they are listening for as students share their thinking.

The sun seems to move in a pattern from east to west across the sky.

The moon also appears to move in a pattern from east to west across the sky.

The movement of the sun causes the shadows on the buildings to change.

They grow longer as the sun rises, shorter as the sun is high in the sky around noon, and grow longer again when the sun is setting. Shadows are cast in the opposite direction of the sun.