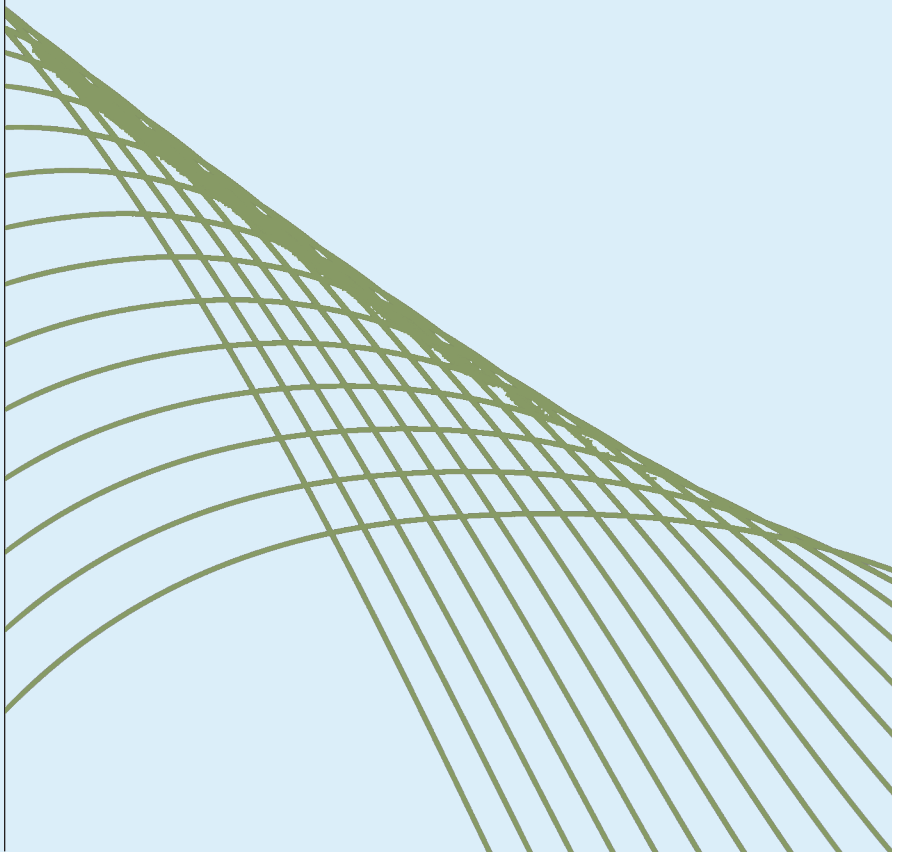
# LESSON 3

# Phases of the Moon



## Skill-Building Objectives

1. Identify vocabulary: night, moon.
2. Discriminate night/not night, full moon/not full moon.

## Standards-Based Objectives

1. Students will make observations and use appropriate technology to build an understanding of the Earth, moon, and sun systems.
2. Students will demonstrate the abilities and understanding necessary to do scientific inquiry.
3. Students will demonstrate the ability to think and act as scientists by engaging in active inquiries and investigations.
4. Students will observe and record the change in the apparent shape of the moon from day-to-day over a month, and describe the pattern of changes.

## Materials

### Early Science Kit

- Wally Wonder Storybook: The Changing Moon, pp. 66–68
- My Science Log, pp. 66–68
- Vocabulary Cards: 11–feel, 20–moon, 22–night, 29–see, distractors (e.g., 4–day, 41–wind)
- Photo Cards: 18, 25, 26 (night); 10, 23, 24 (not night); 17, 18, 19 (full moon); 20, 21, 22 (not full moon)
- Wonder Question Card: 5–Does the moon change shape?
- Concept Statement Cards: 13–We live on the Earth; 14–The sun and moon are in the sky; 15–We can see the moon in the _____ sky.
- Science Safety Rule Card: 3–Don't put any materials used in the experiment on yourself or others.
- KWHL Chart
- Science Safety Rule Poster

### Materials You Supply

- Water-based marker
- Earth, moon, sun models from previous lessons
- Flashlight
- Yellow construction paper
- Tape
- Paper punch
- Moon in My Room (optional)

### Prepare Ahead

- Preprogram AAC or organize AT for whatever Ss need to repeat the science question (Does the moon change shape?) and respond with night, moon, yes, no, full moon.
- Cut the yellow construction paper into a circle and punch holes in it with the paper punch. Attach the circle to the flashlight.
- To prepare for this lesson, you will have tracked the phases of the moon for a few weeks using My Science Log, pp. 56–57.

### Repeated Lessons

- Alternate teaching phases of the moon with the concept of full moon during repeated lessons.
- Have Ss take turns being the sun, moon, and Earth in the experiment during repeated lessons.

# Lesson Plan

## *Engage*

### WONDER STORY

**TEACHER** Point out Wonder Wally on the cover of the Wonder Wally Storybook. Say, **Wonder Wally thinks about science in the world. He always wants to learn more. He will help you learn more too. Let's keep reading stories with Wally and wondering with him.** Read the story, The Changing Moon, to the Ss.

**STUDENT** Listens and observes.

### WONDER QUESTION

**TEACHER** At the end of the story, say, **Find the question in our story.** Give each S a turn to find the question, Does the moon change shape? in the story.

**STUDENT** Finds the question.

**PROMPT** Wait for S to try. If needed, say, **Look for the question mark.** If needed, physically guide S's hand to the question in the story and say, **Here it is. This is the question.**

**TEACHER** **That's right. That's the question. Now read it with me.**

**STUDENT** Reads with you or points to the question text, moving left to right as you read it.

**PROMPT** If needed, physically guide the S to point left to right to the text while you read it.

**TEACHER** Hold up the Wonder Question Card and say, **Here is the question. Read this question with me.** Help Ss point to the text while you read the question again. Then, cover the word *moon* with a Post-It® note or your finger. Read the uncovered question text, **Does the _____ change shape?** Wait for Ss to complete the covered word.

**STUDENT** Says the missing word *moon.*

**TEACHER** Give praise, **Nice work filling in the missing word.**

### WANT TO KNOW

**TEACHER** **We want to know, Does the moon change shape? Let's put this question in the W row for what we want to know.** Have a S place the Wonder Question in the W column of the KWHL chart.


**STUDENT** Places the card on the chart.

### VOCABULARY

**TEACHER** Review the Vocabulary Cards for *night* and *moon* and 2 distractor cards with the Ss. Place the 4 cards in front of the Ss and introduce them by naming what each is. Then use the time-delay procedure (Rounds 1 and 2) to have each S point to the card for *night,* then *moon*. (Review the full script on p. 98 if needed.)

**Round 1:** Point to the correct answer while giving the directive (0-second delay). Say, **Show me night.** Shuffle the cards and repeat for *moon*.

Give each S a chance to find the Vocabulary Cards for *night* and *moon,* mixing up cards as you go.

**STUDENT** Points to the correct word and says word aloud (or activates AAC device).

**FEEDBACK** If the S points to the correct word, give praise, **Great job finding night (moon)!**

**PROMPT** If S does not point or points to an incorrect word, provide a prompt (see p. 98 for script).

**TEACHER** **Round 2:** With the 4 cards still in front of the Ss, say, **Show me night.** Wait 5 seconds for S to choose the correct answer independently. Shuffle the cards and repeat for *moon*.

**STUDENT** Points to the correct word and says word aloud (or activates AAC device).

**FEEDBACK** If the S points to the correct word, give praise, **Great job finding night (moon)!**

**PROMPT** If S does not point, or points to an incorrect word, provide a prompt (see p. 98 for script).

## *Investigate*

### PRIOR CONCEPT STATEMENT REVIEW

> ***Note***
>
> If needed, use a moon phases website (such as www.moonconnection.com/moon_phases_calendar.phtml) to find out what the moon looked like on previous nights. This website will show you what the moon looked like for any night in a month.

**TEACHER** Show Ss a Photo Card for moon. Help as needed to hold and look at the photo. Ask Ss, **What is this?**

**STUDENT** Looks at and holds the photo; responds, "Moon."

**TEACHER** Have Ss open their My Science Log to the first page of this lesson. At this point in the unit, Ss should have cut-out and pasted (or drawn) phases of the moon as observed for a few weeks. Review the Moon Calendar in their science logs with Ss. Ask, **What did the moon look like last night?**

**STUDENT** Points to the picture in his or her science log or adds a moon to the Moon Calendar.

**PROMPT** Model pointing to the correct phase of the moon if needed.

**TEACHER** Show Ss what the moon looked like the night before using a web image, a picture of the moon, or by drawing the phase of the moon where all Ss can see it. (If you have a Moon in Your Room, use it to show the phase of the moon.) Say, **This is what the moon looked like last night. Does this look the same as the one you have marked in your science log?**

**STUDENT** Answers "yes" or "no," or points to the correct picture in their science log.

**TEACHER** Show Ss the model of the Earth, sun, and moon. Say, **Today we are going to talk about the different phases of the moon.** Point to each respective model as you say, **Remember the model of the Earth, the sun, and the moon that we made.**

**STUDENT** Looks at and holds the Earth, sun, and moon models.

**TEACHER** Review and read the concept statements from the last lessons. **We learned that we live on the Earth. And we learned that the sun and the moon are in the sky.**

**STUDENT** Reads or points to the concept statement text.

**PROMPT** Physically prompt the S to point to the text left to right while you read it.

**TEACHER** Then have the Ss point to the Earth, the moon, and the sun models.

**STUDENT** Points to the models.

**PROMPT** If needed, model pointing to the models while saying, **The sun and the moon are in the sky.** If needed, physically prompt the Ss to point to the sun and moon models.

**TEACHER** **Watch me put these cards on the KWHL chart in the K row for what we know.**


**STUDENT** Observes.

**TEACHER** **Today we will learn more about the moon.**

### SCIENCE SAFETY RULE

**TEACHER** Review the science safety rule for this lesson. Hold up the Science Safety Rule Card—**Don't put any materials**

**used in the experiment on yourself or others—**and read it to the Ss while pointing to the words. Then help different Ss point to the text and read with you.

**STUDENT** Reads with you or points to the text.

**PROMPT** If needed, physically guide the S to point left to right to the text while you read it.

**TEACHER** **Today, we will be using a flashlight. If you have the flashlight, do not shine it in anyone's eyes, including your own eyes.** Have a S add the rule to the blank Science Safety Rules Poster hanging in your classroom.

**STUDENT** Observes or adds the rule to the poster.

## PREDICTION

**TEACHER** Have Ss open their My Science Log to the prediction page for this lesson.

**Today, we are going to use our models in our experiment. When you looked at the moon these past few nights, it looked different each night. Do you think the moon changes shape? Remember our question, Does the moon change shape?** Wait for Ss to generate a response.

**STUDENT** Generates a prediction response without options.

**FEEDBACK** Praise guessing; there is no single correct answer for prediction.

**PROMPT** If the S does not respond independently, offer 4 options (e.g., does, does not, rock, water).

**TEACHER** Ask each S to complete this prediction sentence in his or her science log: I think the moon _____ change shape.

**STUDENT** Communicates or writes a prediction response on the line.

**FEEDBACK** Give praise: **Great job making a prediction!**

**PROMPT** If S still does not respond, say, **I'm not sure what you think. Let's fill in the prediction statement together. Let's predict, I think the moon does not change shape.** Use LIP to guide S to respond in his or her science log.

## EXPERIMENT

**TEACHER**


As you conduct the experiment, pair the Vocabulary Cards (indicated in bold) to the concrete objects while you are discussing them.

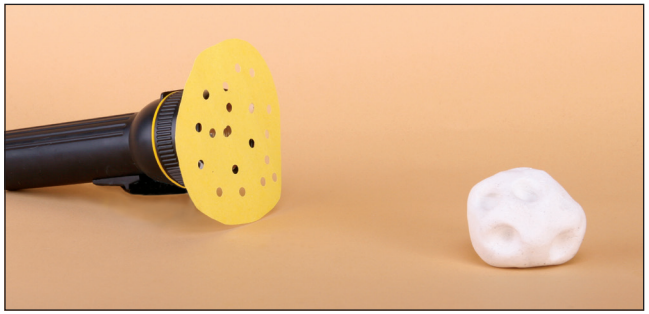
Say, **We are going to use our moon model to see what the moon looks like from Earth. Would you help me? Let's see if we can do it together. We are going to see and feel the moon. Watch me fill in the H on our KWHL chart for how we will find out whether the moon changes shape. We will use our eyes to see and our hands to feel the moon.** Place vocabulary for *see* and *feel* in the H row on the KWHL chart.

**STUDENT** Observes.

**TEACHER** Remove the moon and the sun from the Earth model. Have the Ss feel the moon. **Now feel the shape of the moon. The moon is round. What shape is the moon?**

**STUDENT** Communicates, "Round," and notices that all the models are round.

**TEACHER** Together with your Ss, create the phases of the moon model:



1. Tape the sun model (yellow construction paper circle with holes punched in it) to the flashlight.
2. Darken lights in the room and turn on the flashlight. Give the flashlight to one S; tell all that this S is the "sun."
3. Have another S be the "moon." Have this S hold up the moon model so that the light shines directly on it.
4. Have the remaining Ss be the Earth; have them sit between the sun and the moon. Have a S in this group hold the model of the Earth.
5. Together, observe how the light shines on the moon. Have the S holding the moon walk in a slow circle around the Earth, stopping at least 6 times at different spots (to correspond to phases as indicated on the Moon Calendar). Each time the "moon" stops, show Ss a corresponding picture of the phase. Have the S with the flashlight (the sun) and the Earth Ss remain stationary while the moon rotates around the Earth.
6. During the experiment, tell Ss, **Usually, we see the moon at night, but sometimes, we see the moon during the day. The moon does not make its own light. What we see is the light from the sun reflecting off the moon. As the moon moves (rotates) around the Earth, we see the parts of the moon that are lit up by the sun. This makes it look like the moon is changing its shape but it is really isn't. The moon is just showing the sun's light reflecting on it. The moon stays round and doesn't change its shape. The moon is usually in the night sky.**

***Repeated Lessons***

Assign different Ss to hold the sun, the moon, and the Earth each time the lesson is repeated.

## CONCEPT STATEMENT—TRIAL 1

**TEACHER** 

Hold the Concept Statement Card against the moon model. Then read the statement, **We can see the moon in the _____ sky,** completing it with the word *night*.

Hand the Concept Statement Card to Ss and have them also say it and hold it near the moon model.

**STUDENT** Says and matches the concept statement to the moon model.

**TEACHER** Place the concept statement on the table along with 4 Vocabulary Card options for completing the statement. Use the time-delay procedure to have Ss choose a card to fill in the blank in the concept statement, We can see the moon in the _____ sky.

Give each S a chance to find the card for *night,* shuffling the cards each time.

**Round 1** (0-second delay): Point to the correct answer while saying, **Which one? We can see the moon in the _____ sky.**

**STUDENT** Chooses the card for *night*.

**FEEDBACK** **Yes, we see the moon in the night sky.**

**PROMPT** If S does not point, or points to an incorrect word, provide a prompt (see p. 98 for script).

**TEACHER** **Round 2** (5-second delay): Restate the question. Wait up to 5 seconds for S to independently find the correct answers.

**STUDENT** Chooses the card for *night*.

**FEEDBACK** **Great job finding night!**

**PROMPT** If S does not point, or points to an incorrect choice, revert back to a 0-second time delay. Provide additional prompts as needed (see p. 98 for script).

## Describe

### EXPERIMENT REVIEW

**TEACHER** Pair the Vocabulary Cards (indicated in bold) to the concrete objects as you are discussing them. **Let's review what we did today in our experiment. We made a model of what the moon looks like from Earth. We can see a full moon. A full moon occurs when the entire sunlit part of the moon is facing us. Usually this happens at night.**

Help Ss share their discovery. Show Photo Cards of full moons and not full moons, or show a full moon with the moon model (or a full moon with a Moon in My Room). When the moon is in the full moon phase, emphasize to Ss, **This is a full moon. During a full moon, the entire sunlit part of the moon is facing us.** Continue to show Photo Cards of phases of the moon. Ask Ss to tell you when they see a full moon, or ask, **Is this a full moon?** Allow Ss time to generate a yes/no response.

**STUDENT** Engages with the moon and identifies when it is full.

***Challenge?***

What lights up the full moon? (the sun's reflection on the moon)

### CONCEPT STATEMENT—TRIAL 2

**TEACHER** Hold the Concept Statement Card against the moon model. Then read the statement, **We can see the moon in the _____ sky,** completing it with the word *night*.

Hand the Concept Statement Card to Ss and have them also say it and hold it near the moon model.

**STUDENT** Says and matches the concept statement to the moon model.

**TEACHER** Place the concept statement on the table along with 4 Vocabulary Card options for completing the statement. Use the time-delay procedure to have Ss choose a card to fill in the blank in the concept statement, We can see the moon in the _____ sky.

Give each S a chance to find the card for night, shuffling the cards each time.

**Round 1** (0-second delay): Point to the correct answer while saying, **Which one? We can see the moon in the _____ sky.**

**STUDENT** Chooses the card for *night*.

**FEEDBACK** **Yes, we see the moon in the night sky.**

**PROMPT** If S does not point, or points to an incorrect word, provide a prompt (see p. 98 for script).

**TEACHER** **Round 2** (5-second delay): Restate the question. Wait up to 5 seconds for S to independently find the correct answers.

**STUDENT** Chooses the card for *night*.

**FEEDBACK** **Great job finding night!**

**PROMPT** If S does not point, or points to an incorrect choice, revert back to a 0-second time delay. Provide additional prompts as needed (see p. 98 for script).

### CONCEPT DEVELOPMENT—NIGHT

**TEACHER** Teach the concept of *night* and *not night* using the example/non-example procedure with a yes/no response. (See p. 103 for script.)

Place 3 Photo Cards of nighttime scenes and 3 Photo Cards of daytime scenes in front of the S.






1. **Frame.** **Today we are going to learn about the word *night*. Listen. Today we are going to learn about the word *night*. What are we going to learn about?**
2. **Model.** *Example:* Point to a Photo Card of night and say, **Is this night? Yes.** *Non-example:* Point to a Photo Card of daytime and say, **Is this night? No.** Repeat randomly for remaining Photo Cards.
3. **Lead.** *Example:* Point to a Photo Card of night and say, **You do it with me. Is this night? Yes.** *Non-example:* Point to a Photo Card of daytime and say, **Is this night? No.** Repeat randomly for remaining Photo Cards.
4. **Test.** Hold up a nighttime Photo Card and say, **Now it's your turn. Is this night?** Hold up a daytime Photo Card and say, **Is this night?**

## CONCEPT DEVELOPMENT—FULL MOON

***Note***

The idea of the moon's phases is challenging for most Ss. Use online videos to illustrate this concept. Search YouTube for videos.

**TEACHER**

Teach the concept of *full moon/not full moon* using the example/non-example procedure. (See p. 99 for script.)

Place 3 Photo Cards of full moons and 3 Photo Cards of another moon phase on the table in front of the S.






1. **Frame.** Use a Photo Card of a full moon. Tell Ss, **This is a full moon. During a full moon, the entire sunlit part of the moon is facing us. Today we are going to learn about a full moon. Listen. Today we are going to learn about a full moon. What are we going to learn about?**
2. **Model.** *Example.* Point to a Photo Card of a full moon and say, **This is a full moon.** *Non-example:* Point to Photo Card of a moon that is not full and say, **This is not a full moon.** Repeat randomly for remaining Photo Cards.
3. **Lead.** *Example:* Point to a Photo Card of a full moon and say, **You do it with me. This is a full moon.** *Non-example:* Point to Photo Card of a moon that is not full and say, **This is not a full moon.** Repeat randomly for remaining Photo Cards.
4. **Test.** Place 3 not-full-moon Photo Cards and 1 full-moon Photo Card on the table. Say, **Now it's your**

**turn. Find the full moon.** Place 3 full-moon Photo Cards and 1 not-full-moon Photo Card on the table. Say, **Find one that is not a full moon.**

***Repeated Lessons***

Alternate teaching phases of the moon with full moon.

## Explain

### PREDICTION REVIEW

**TEACHER** Show the moon model (or use Moon in My Room). Allow Ss to feel it. Say, **Let's think back to your prediction about whether the moon changes shape. Some of you thought that the moon does change shape. Some of you thought that the moon does not change shape.** Review all predictions. **What do you think now?** Wait for Ss to answer.

**STUDENT** Identifies his or her own prediction.

**TEACHER** After each S answers, explain, **No, the moon does not change shape. It is always round.** Let the Ss feel the moon model. **It just looks like it changes shape because of how the sun lights it and how we see it from Earth. We looked at a full moon. Remember, we see a full moon when the whole sunlit part of the moon faces us on Earth.** Show Ss a Photo Card of a full moon.

### PREDICTION CHECK

**TEACHER** Have students check their My Science Log to see whether their prediction was correct. If not, say, **Make your answer say the moon does not change shape.**

**STUDENT** Checks if prediction was "does not." Changes prediction if needed.

**PROMPT** Use LIP to help S change his or her prediction. Show where the "does not" response is on an AAC device, or model writing the words *does not* to complete the prediction statement.

## Report

**TEACHER** **Now, let's see what we have to report from today's work. We made a model of what the moon looks like from Earth.** Have Ss look at or touch the moon model. **Ask Ss, What is this a model of?**

**STUDENT** Communicates, "Moon."

**FEEDBACK** Give praise, **Yes, this is a model of the moon.**

### CONCEPT STATEMENT—TRIAL 3

**TEACHER** Hold the concept statement card against the moon model. Then read the statement, **We can see the moon in the _____ sky,** completing it with the word *night*.

Hand the Concept Statement Card to Ss and have them also say it and hold it near the moon model.

**STUDENT** Says and matches the concept statement to the moon model.

**TEACHER** Place the concept statement on the table along with 4 Vocabulary Card options for completing the statement. Use the time-delay procedure to have Ss choose 2 cards to fill in the blank in the concept statement, We can see the moon in the _____ sky.

Give each S a chance to find the card for *night,* shuffling the cards each time. If Ss are ready, begin with Round 2 using a 5-second delay.

**Round 2** (5-second delay): Say, **Which one? We can see the moon in the _____.** Wait up to 5 seconds for S to independently find the correct answers.

**STUDENT** Chooses the card for *night*.

**FEEDBACK** **Great job finding night!**

**PROMPT** If S does not point, or points to an incorrect choice, revert back to a 0-second time delay. Provide additional prompts as needed (see p. 98 for script).

## LEARN STATEMENT

**TEACHER** Say, **Nice work! We learned something new today. We learned we can see the moon in the night sky. I will write the word *night* on our concept statement.**


Write the word *night* on the Concept Statement Card using a water-based marker. **Help me put this in the L row on our KWHL Chart to show what we have learned.** Have a S place the learned statement on the KWHL Chart in the L row.

**STUDENT** Places the card on the chart.

**TEACHER** **You just told me that, We can see the moon in the night sky. How do you know this? How do you know that the moon is in the night sky?** Wait for some Ss to generate a response.

**STUDENT** Gives some justification without options, if possible.

**TEACHER** Have Ss open their My Science Log to the I Know statement page for this lesson. Model writing a response on the blank line: I know because _____.

**PROMPT** Give Ss 1 correct option (I saw the moon in the night sky), and 1 or 2 implausible options (the Earth has soil, I can hear).

**FEEDBACK** Praise the Ss, **You are such good thinkers!**

## STUDENT REPORT

**TEACHER** Refer Ss to their My Science Log book. Have them complete their Student Reports by circling, pointing to, or eye gazing to a response for each item. Adapt the tasks as needed for individual students.

**STUDENT** Completes the pages of the Student Report for this lesson.

**FEEDBACK** **You are all amazing scientists! Look what you have learned!**

**PROMPT** Use LIP to help the S complete the Student Report in his or her science log.

# Special Accommodations

## Engage

### WONDER STORY

For Ss who are building symbolic understanding, read the Wonder Story in a dimly lit room to simulate night. Present the models of the phases of the moon using a night diorama. To create a diorama, use a shoebox, black construction paper, and a clay moon. Glue soil, rocks, and flowers to the bottom of the box. Glue the construction paper and moon on the side of the box. Shine a flashlight on the moon to emphasize the moon phases.

### VOCABULARY

Ss with visual impairments may require a completely dark room in order to identify night and moon using a flashlight. Also ask yes/no questions in order to get accurate responses (e.g., Turn the lights out and ask, **Is this night?** or **Do you sleep at night?).**

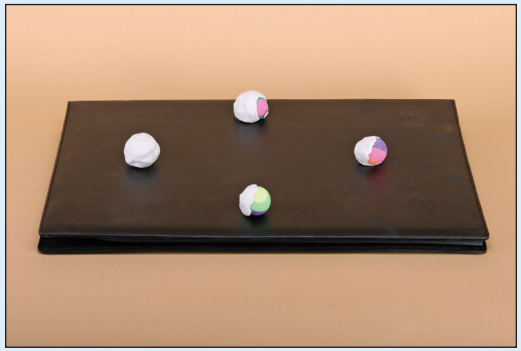
## Investigate

### PREDICTION

Ss may require that the prediction question be asked in a yes/no form (e.g., **Do you think the moon changes shape?).**

### EXPERIMENT

Phases of the moon can be demonstrated using Magic modeling clay layered over a rubber ball. This will help Ss with visual impairments feel that the moon itself does not change with the phases.



## Report

### LEARN STATEMENT

For a S who is unable to access paper/pencil tasks, have him or her finish the concept statement using an AAC device, or by eye gazing to a response. For example, read, We can see the moon in the _____ sky, and have the S activate the AAC device to say the word *night*.

# Unit Three/Lesson 3 Task Analysis

| | Teaching Step | Student Response | Specific to This Lesson |
|---|---|---|---|
| Engage | **1** Read the Wonder Story. | Listens and engages with story. | The Changing Moon |
| | **2** Have Ss find the question. | Finds the question. | Does the moon change shape? |
| | **3** Help place the question on KWHL Chart in W row. | Places the card on the chart. | |
| | **4** Teach/review vocabulary using time delay. | Points to vocabulary at 0-second delay; at 5-second delay (given 4 options). | night, moon |
| Investigate | **5** Review prior concept statements and place them on KWHL Chart in K row. | Helps read prior Concept Statement Cards. | We live on the Earth. The sun and the moon are in the sky. |
| | **6** Review science safety rule. | Observes and places rule on poster. | Don't put any materials used in the experiment on yourself or others. |
| | **7** Ask for prediction. | Makes prediction. | Do you think the moon changes shape?<br>I think the moon _____ change shape. |
| | **8** Fill in H of KWHL Chart. | Observes. | Eyes to see and hands to feel |
| | **9** Conduct experiment. | Engages with materials. | Demonstration of the phases of the moon |
| | **10** Present concept statement using time delay (Trial 1). | Chooses vocabulary to complete statement (given 4 options). | We can see the moon in the _____ sky. |
| Describe | **11** Review what happened. | Listens. | |
| | **12** Present concept statement using time delay (Trial 2). | Chooses vocabulary to complete statement (given 4 options). | We can see the moon in the _____ sky. |
| | **13** Develop concepts using example/non-example. | Points to objects as directed. | night (with a yes/no response), full moon |

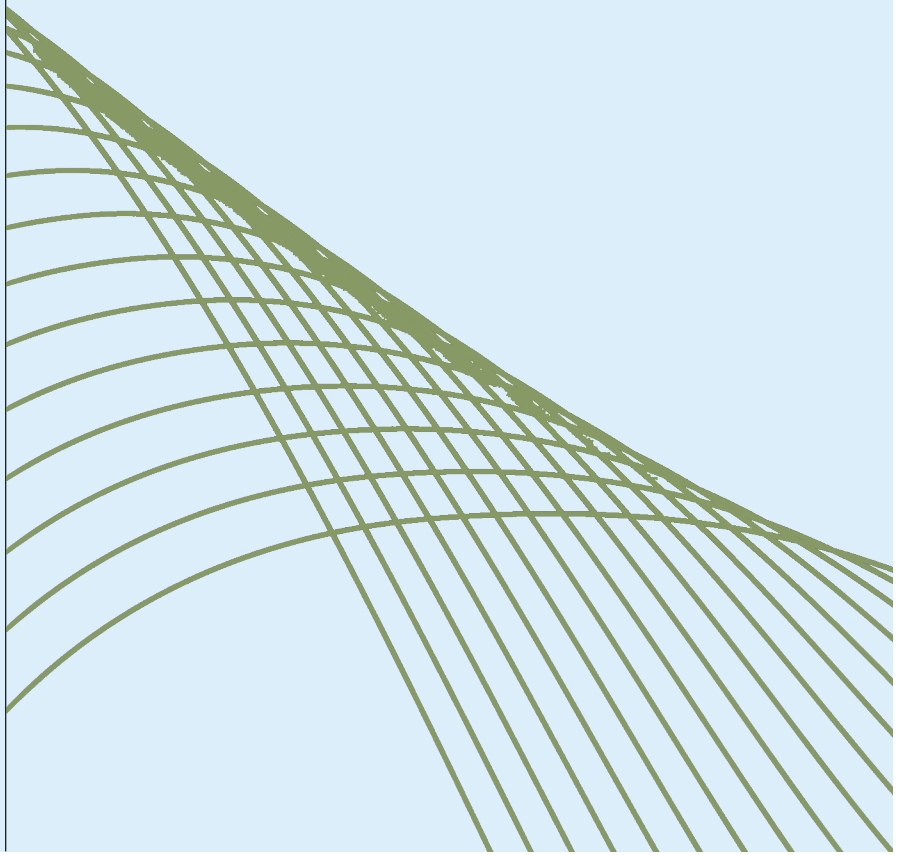
*(Table continues)*

## Unit Three/Lesson 3 Task Analysis *(Continued)*

| | Teaching Step | Student Response | Specific to This Lesson |
|---|---|---|---|
| Explain | **14** Review predictions. | Reviews predictions. | The moon (does not) change shape. |
| | **15** Suggest change to prediction if needed. | Makes change if necessary. | |
| Report | **16** Present concept statement using time delay (Trial 3) at 5-second delay. | Chooses vocabulary to complete statement (given 4 options). | We can see the moon in the _____ sky. |
| | **17** Help place completed concept statement on KWHL Chart in L row. | Places the card on the chart. | We can see the moon in the night sky. |
| | **18** Present student report. | Completes Student Report. | My Science Log |

# LESSON 4

# The Function of the Sun



## Skill-Building Objectives

1. Identify vocabulary: sunlight, day.
2. Discriminate light/not light, dark/not dark, day/not day.

## Standards-Based Objectives

1. Students will make observations and use appropriate technology to build an understanding of the Earth, moon, and sun systems.
2. Students will demonstrate the abilities and understanding necessary to do scientific inquiry.
3. Students will demonstrate the ability to think and act as scientists by engaging in active inquiries and investigations.

## Materials

### Early Science Kit

- Wonder Wally Storybook: Fun in the Sun, pp. 69–71
- My Science Log, pp. 69–72
- Vocabulary Cards: 4–day, 11–feel, 29–see, 37–sunlight, distractors (e.g., 22–night, 41–wind)
- Photo Cards: 7, 9, 15 (light, not dark); 19, 25, 26 (not light, dark); 10, 12, 23 (day); 17, 18, 21 (not day)
- Wonder Question Card: 16–Where does light come from?
- Concept Statement Cards: 13–We live on the Earth; 14–The sun and moon are in the sky; 15–We can see the moon in the night sky; 16–The sun gives the Earth _____ during the day.
- Science Safety Rule Card: 3–Don't put any materials used in the experiment on yourself or others.
- KWHL Chart
- Science Safety Rule Poster

### Materials You Supply

- Water-based marker
- Earth model
- Moon model made in earlier lesson
- Sun model made in previous lessons
- Flashlight
- Tape

### Prepare Ahead

- Preprogram AAC or organize AT for whatever Ss need to repeat the science question (Where does light come from?) and respond with light, dark, day, yes, no.

***Note***

You may need to make a larger sun model for this experiment (see earlier lesson). The sun model needs to be larger than the diameter of the flashlight.

### Repeated Lessons

- Alternate teaching the concept of *light/not light* with the concept of *dark/not dark* in repeated lessons.

## Lesson Plan

### *Engage*

**WONDER STORY**

**TEACHER** Point out Wonder Wally on the cover of the Wonder Wally Storybook. Say, **Wonder Wally thinks about science in**

**the world. He always wants to learn more. He will help you learn more too. Let's keep reading stories with Wally and wondering with him.** Read the story, Fun in the Sun, to the Ss.

**STUDENT** Listens and observes.

## WONDER QUESTION

**TEACHER** At the end of the story, say, **Find the question in our story.** Give each S a turn to find the question, Where does light come from? in the story.

**STUDENT** Finds the question.

**PROMPT** Wait for S to try. If needed, say, **Look for the question mark.** If needed, physically guide S's hand to the question in the story and say, **Here it is. This is the question.**

**TEACHER** **That's right. That's the question. Now read it with me.**

**STUDENT** Reads with you or points to the question text, moving left to right as you read it.

**PROMPT** If needed, physically guide the S to point left to right to the text while you read it.

**TEACHER** Hold up the Wonder Question card and say, **Here is the question. Read this question with me.** Help Ss point to the text while you read the question again. Then, cover the word *light* with a Post-It® note or your finger. Read the uncovered question text, **Where does _____ come from?** Wait for Ss to complete the covered word.

**STUDENT** Says the missing word *light.*

**TEACHER** Give praise, **Nice work filling in the missing word.**

## WANT TO KNOW

**TEACHER** **We want to know, Where does light come from? Let's put this question in the W row for what we want to know.** Have a S place the Wonder Question in the W column of the KWHL chart.


**STUDENT** Places the card on the chart.

## VOCABULARY

**TEACHER** Review the Vocabulary Cards for *sunlight* and *day* and 2 distractor cards with the Ss. Place the 4 cards in front of the Ss and introduce them by naming what each is. Then use the time-delay procedure (Rounds 1 and 2) to have each S point to the card for *sunlight,* then *day*. (Review the full script on p. 98 if needed.)

**Round 1:** Point to the correct answer while giving the directive (0-second delay). Say, **Show me sunlight.** Shuffle the cards and repeat for *day*.

Give each S a chance to find the Vocabulary Card for *sunlight* and *day,* mixing up cards as you go.

**STUDENT** Points to the correct word and says word aloud (or activates AAC device).

**FEEDBACK** If the S points to the correct word, give praise, **Great job finding sunlight (day)!**

**PROMPT** If S does not point, or points to an incorrect word, provide a prompt (see p. 98 for script).

**TEACHER** **Round 2:** With the 4 cards still in front of the Ss, say, **Show me sunlight.** Wait 5 seconds for S to choose the correct answer independently. Shuffle the cards and repeat for *day*.

**STUDENT** Points to the correct word and says word aloud (or activates AAC device).

**FEEDBACK** If the S points to the correct word, give praise, **Great job finding sunlight (day)!**

**PROMPT** If S does not point, or points to an incorrect word, provide a prompt (see p. 98 for script).

## Investigate

### PRIOR CONCEPT STATEMENT REVIEW

**TEACHER** Show Ss the models of the sun and moon made in Unit Three, Lesson 2. Help as needed to hold and look at the models. Hold up one at a time and ask Ss, **What is this?**

**STUDENT** Looks at and holds the models; responds, "Sun" and "Moon."

**TEACHER** Remove the sun and moon from the Earth model made in Lesson 2. Show Ss the model of the Earth and have them point to each as you name it.

**STUDENT** Points to each model when asked.

**TEACHER** Review and read concept statements from the previous lessons, **These are models of the Earth, the sun, and the moon. We already learned that we live on the Earth. And we know the sun and the moon are in the sky. We also learned that we can see the moon in the night sky.**

**STUDENT** Reads or points to the concept statement text.

**PROMPT** Physically prompt the S to point to the text left to right while you read it.

**TEACHER** **Watch me put these cards on the KWHL chart in the K row for what we know.**


**STUDENT** Observes.

**TEACHER** **Today we will learn about the sun.**

### SCIENCE SAFETY RULE

**TEACHER** Review the science safety rule for this lesson. Hold up the Science Safety Rule Card—**Don't put any materials used in the experiment on yourself or others—**and read it to the Ss while pointing to the words. Then help different Ss point to the text and read with you.

**STUDENT** Reads with you, or points to the text.

**PROMPT** If needed, physically guide the S to point left to right to the text while you read it.

**TEACHER** **We'll be using a flashlight in our experiment today. Do not shine the flashlight in anyone's eyes, including your eyes.**

Have a S add the rule to the blank Science Safety Rules Poster hanging in your classroom.

**STUDENT** Observes or adds the rule to the poster.

### PREDICTION

**TEACHER** If possible, take Ss outside in the sunlight to ask this prediction question. Say, **Today we are going to learn more about the Earth. When we are outside during the day like this, there is light. What makes the light during the day?** Wait for Ss to generate a response. **Remember our question, Where does light come from?**

**STUDENT** Generates a prediction response without options.

**FEEDBACK** Praise guessing; there is no single correct answer for prediction.

**PROMPT** If the S does not respond independently, offer 4 options (e.g., water, the sun, the land, a rock).

**TEACHER** Back in the classroom, have Ss open their My Science Log to the prediction page for this lesson. Ask each S to complete this prediction sentence in the science log: I think the _____ makes the light during the day. Communicates or writes a prediction response on the line.

**FEEDBACK** Give praise: **Great job making a prediction!**

**PROMPT** If Ss still do not respond, say, **I'm not sure what you think. Let's fill in the prediction statement together. Let's predict, I think the moon does not change**

**shape.** Use LIP to guide the S to make a response in his or her science log.

## EXPERIMENT

**TEACHER** As you conduct the experiment, pair the Vocabulary Cards (indicated in bold) to the discussion.


Say, **Today, we are going to use the models of the Earth and moon we made. We will also use a model of the sun. When we are outside during the day, we see light. We are going to find out where the light comes from. We are going to see and feel the models to conduct our investigation. We are going to use our model of the sun. Watch me fill in the H on our KWHL chart for how we will find out. We will use our eyes to see and our hands to feel the models.** Place vocabulary for *see* and *feel* in the H row on the KWHL chart.

**STUDENT** Observe.

**TEACHER** Demonstrate the concept of *sunlight,* having Ss actively help:

1. Hold the moon model over the Earth. Explain to Ss, **The moon is over the Earth, but there is no sunlight on the Earth. The moon does not create sunlight on the Earth.**

2. Attach the paper sun model to the flashlight and turn the flashlight on. Remind Ss this is a model of the sun and the sunlight shining through.
3. Hold up the Earth model. Say, **Now let's look at the sun and the Earth.** Ask a S to shine the sun on the Earth. Explain to Ss, **The sun is over the Earth. It is shining light on the Earth. The sun creates the light. We call it sunlight. During the day we can see light. Even when the sun is behind the clouds, it is light outside.**
4. **Point to the sunlight on the model of the Earth. Yes, that is sunlight! Very good.**

## CONCEPT STATEMENT—TRIAL 1

**TEACHER** Hold the Concept Statement Card against the Earth and sun models. Then read the statement, **The sun gives the Earth sunlight during the _____,** completing it with the word *day*. Hand the Concept Statement Card to Ss and have them also say it and hold it near the Earth and the sun models.

**STUDENT** Says and matches the concept statement to the Earth and sun models.

**TEACHER** Place the concept statement on the table along with 4 Vocabulary Card options for completing the statement. Use the time-delay procedure to have Ss choose a card to fill in the blank in the concept statement, The sun gives the Earth sunlight during the _____.

Give each S a chance to find the card for *day,* shuffling the cards each time.

**Round 1** (0-second delay): Point to the correct answer while saying, **Which one? The sun gives the Earth sunlight during the _____.**

**STUDENT** Chooses the card for *day*.

**FEEDBACK** **Yes, the sun gives the Earth sunlight during the day.**

**PROMPT** If S does not point, or points to an incorrect word, provide a prompt (see p. 98 for script).

**TEACHER** **Round 2** (5-second delay): Restate the question. Wait up to 5 seconds for S to independently find the correct answers.

**STUDENT** Chooses the card for *day*.

**FEEDBACK** **Great job finding day!**

**PROMPT** If S does not point, or points to an incorrect choice, revert back to a 0-second time delay. Provide additional prompts as needed (see p. 98 for script).

## Describe

### EXPERIMENT REVIEW

**TEACHER** As you review, pair the Vocabulary Cards (indicated in bold) to the discussion.

**Let's review what we did today during our experiment. We used the model of the sun to find out where the light we see during the day comes from. We placed the model moon over the Earth, and it didn't make any light. When the Earth is facing the moon at night, there is no light. When we put the sun over the Earth, the sun created sunlight that shined down on the Earth. We see the sun during the day. We can see sunlight during the day. When do we see sunlight?** Give Ss time to generate a response.

**STUDENT** Identifies that they see sunlight during the day.

**FEEDBACK** **Very good! The sun is in the sky during the day. The sun creates sunlight that shines down to the Earth. We see the sunlight during the day.**

**TEACHER** Help Ss share their discovery. **Today we learned that the sun gives the Earth light. When is there sunlight on the Earth?**

**STUDENT** Identifies that sunlight occurs during the day.

***Challenge?***

Why can't we see sunlight at night? (A part of Earth does not face the sun at night.)

### CONCEPT STATEMENT—TRIAL 2

**TEACHER** 

Hold the Concept Statement Card against the Earth and sun models. Then read the statement, **The sun gives the Earth sunlight during the _____,** completing it with the word *day*.

Hand the Concept Statement Card to Ss and have them also say it and hold it near the Earth and the sun models.

**STUDENT** Says and matches the concept statement to the Earth and sun models.

**TEACHER** Place the concept statement on the table along with 4 Vocabulary Card options for completing the statement. Use the time-delay procedure to have Ss choose a card to fill in the blank in the concept statement, The sun gives the Earth sunlight during the _____.

Give each S a chance to find the card for *day,* shuffling the cards each time.

**Round 1** (0-second delay): Point to the correct answer while saying, **Which one? The sun gives the Earth sunlight during the _____.**

**STUDENT** Chooses the card for *day*.

**FEEDBACK** **Yes, the sun gives the Earth sunlight during the day.**

**PROMPT** If S does not point, or points to an incorrect word, provide a prompt (see p. 98 for script).

**TEACHER** **Round 2** (5-second delay): Restate the question. Wait up to 5 seconds for S to independently find the correct answers.

**STUDENT** Chooses the card for *night*.

**FEEDBACK** **Great job finding night!**

**PROMPT** If S does not point, or points to an incorrect choice, revert back to a 0-second time delay. Provide additional prompts as needed (see p. 98 for script).

## CONCEPT DEVELOPMENT—LIGHT, DARK

> ***Note***
>
> If the vocabulary terms *light* and *sunlight* are confusing for a S, substitute "sunlight" for all vocabulary. However, do not do this unless it is necessary to control for overgeneralization of the term light (not all light is sunlight).

**TEACHER**

Teach the concept of *light/not light* using the example/non-example procedure. (See p. 99 for script.)

Place 3 Photo Cards of daytime scenes with sunlight and 3 Photo Cards of nighttime scenes on the table in front of the S.

1. **Frame.** **Today we are going to learn about what light means. Listen. Today we are going to learn about light. What are we going to learn about?**
2. **Model.** *Example:* Point to a daytime Photo Card and say, **This shows light.** *Non-example:* Point to a nighttime Photo Card and say, **This is not light.** Repeat randomly with remaining Photo Cards.
3. **Lead.** *Example:* Point to a daytime Photo Card and say, **Let's do it together. This is light.** *Non-example:* Point to a nighttime Photo Card and say, **This is not light.** Repeat randomly with remaining Photo Cards.
4. **Test.** Place 3 nighttime Photo Cards and 1 daytime Photo Card on the table. Say, **Now it's your turn. Find light.** Place 3 daytime Photo Cards and 1 nighttime Photo Card on the table. Say, **Find not light.**

> ***Repeated Lessons***
>
> Alternate teaching the concept of *light/not light* with the concept of *dark/not dark* in repeated lessons.

## CONCEPT DEVELOPMENT—DAY

**TEACHER**

Teach the concept of *day/not day* using the example/non-example procedure with a yes/no response. (See p. 103 for script.)

Place 3 nighttime Photo Cards and 3 daytime Photo Cards in front of the S.

1. **Frame.** **Today we are going to learn about the word *day*. Listen. Today we are going to learn about the word *day*. What are we going to learn about?**
2. **Model.** *Example:* Point to a daytime Photo Card and say, **Is this day? Yes.** *Non-example:* Point to a

night Photo Card and say, **Is this day? No.** Repeat randomly with remaining Photo Cards.

3. **Lead.** *Example:* Point to the daytime Photo Card and say, **Do it with me. Is this day? Yes.** *Non-example:* Point to a nighttime Photo Card and say, **Is this day? No.** Repeat randomly with remaining Photo Cards.
4. **Test.** Point to a daytime Photo Card and say, **Now it's your turn. Is this day?** Point to a nighttime Photo Card and ask, **Is this day?**

## Explain

### PREDICTION REVIEW

**TEACHER** Show the model of the sun (made with the flashlight). Say, **Let's think back to your prediction about what makes the light we see during the day. Some of you thought that the sun made the light. Some of you thought the moon made the light.** Review all predictions. **What do you think now?** Wait for Ss to answer.

**STUDENT** Identifies his or her own prediction.

**TEACHER** After each S answers, explain, **The sun creates light. The light shines down to the Earth in the form of sunlight. During the day when the sun is in the sky, it is light outside. At night, when the moon is in the sky, it is dark outside. Sometimes we can see the moon during the day, but the sun is what creates light. Make your answer say *sun*. The sun makes the light during the day.**

### PREDICTION CHECK

**TEACHER** Have students check their My Science Log to see whether their prediction was correct. If not, say, **Make your answer say, The sun makes the light during the day.**

**STUDENT** Checks if prediction was *sun*. Changes prediction if needed.

**PROMPT** Use LIP to help S change his or her prediction. Help the S use an AAC device to say "sun," or model writing the word *sun* to complete the prediction statement.

## Report

**TEACHER** **Now, let's see what we have to report from today's work. We saw how the sun creates sunlight for the Earth.** Have Ss look at or touch the sunlight on the Earth model when you shine the flashlight from the sun model on it. Ask Ss to identify whether the Earth is light or dark. Say, **Look at the model of the Earth. Is it light or dark?**

**STUDENT** Communicates, "Light."

**FEEDBACK** Give praise, **Yes, the Earth is light.**

## CONCEPT STATEMENT—TRIAL 3

**TEACHER** 

Hold the Concept Statement Card against the Earth and sun models. Then read the statement, **The sun gives the Earth sunlight during the _____,** completing it with the word *day*.

Hand the Concept Statement Card to Ss and have them also say it and hold it near the Earth and the sun models.

**STUDENT** Says and matches the concept statement to the Earth and sun models.

**TEACHER** Place the concept statement on the table along with 4 Vocabulary Card options for completing the statement. Use the time-delay procedure to have Ss choose a card to fill in the blank in the concept statement, The sun gives the Earth sunlight during the _____.

Give each S a chance to find the card for *day,* shuffling the cards each time. If Ss are ready, go directly to Round 2 using a 5-second delay.

**Round 2** (5-second delay): Say, **Which one? The sun gives the Earth sunlight during the _____.** Wait up to 5 seconds for S to independently find the correct answers.

**STUDENT** Chooses the card for *night*.

**FEEDBACK** **Great job finding night!**

**PROMPT** If S does not point, or points to an incorrect choice, revert back to a 0-second time delay. Provide additional prompts as needed (see p. 98 for script).

## LEARN STATEMENT

**TEACHER** 


Say, **Nice work! We learned something new today. We learned the sun gives the Earth sunlight during the day. I will write the word *day* on our concept statement.**

Write the word *day* on the Concept Statement Card using a water-based marker. **Help me put this in the L row on our KWHL Chart to show what we have learned.** Have a S place the learned statement on the KWHL Chart in the L row.

**STUDENT** Places the card on the chart.

**TEACHER** **You just told me that the sun gives the Earth sunlight during the day. How do you know this? How do you know that the sun gives the Earth sunlight during the day?** Wait for some Ss to generate a response.

**STUDENT** Gives some justification without options, if possible.

**TEACHER** Have Ss open their My Science Log to the I Know statement page for this lesson. Model writing a response on the blank line: I know because _____.

**PROMPT** Give Ss 1 correct option (I see sunlight outside during the day) and 1 or 2 implausible options (We shined light on the moon, Rocks are on the ground).

**FEEDBACK** Praise the Ss, **You are such good thinkers!**

## STUDENT REPORT

**TEACHER** Refer Ss to their My Science Log book. Have them complete their Student Reports by circling, pointing to, or eye gazing to a response for each item. Adapt the tasks as needed for individual students.

**STUDENT** Completes the pages of the Student Report for this lesson.

**FEEDBACK** **You are all amazing scientists! Look what you have learned!**

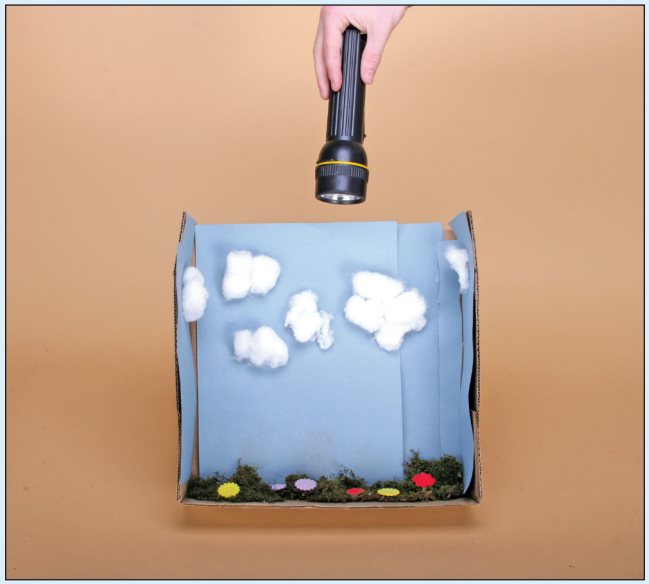
**PROMPT** Use LIP to help the S complete the Student Report in his or her science log.

# Special Accommodations

## Engage

### WONDER STORY

For Ss who are building symbolic understanding, read the Wonder Story in a brightly lit room. Create a diorama for *day*. To create a diorama, use a shoebox. Glue light blue construction paper, cottonballs, plants, and flowers to it to simulate day. Keep an opening at the top of the box in order to shine sunlight through. Some Ss may need you to shine the flashlight on the diorama to emphasize day and sunlight.



### VOCABULARY

To represent sunlight, open and close the window blinds and ask, **Is this sunlight?**

## Investigate

### PREDICTION

Present Ss with AAC devices programmed with response options, or present the S with responses in a yes/no format (e.g., Do you think the sun makes light? Do you think soil makes light?).

## Describe

### CONCEPT DEVELOPMENT—LIGHT, DARK

For a S with a visual impairment, use a flashlight in a darkened room to show light. Turn the flashlight on and ask the S, **Is this light?** Turn the flashlight out, then repeat the question. Do this several times.

For the concept *dark,* begin with a lighted room, then turn the lights out. Repeat the question, **Is this light?**

## Report

### LEARN STATEMENT

For a S who is unable to access paper/pencil tasks, have him or her finish the concept statement using an AAC device, or by eye gazing to a response. For example, read, The sun gives the Earth sunlight during the _____, and have the S eye gaze to the Vocabulary Card for day.

# Unit Three/Lesson 4 Task Analysis

| | Teaching Step | Student Response | Specific to This Lesson |
|---|---|---|---|
| Engage | **1** Read the Wonder Story. | Listens and engages with story. | Fun in the Sun |
| | **2** Have Ss find the question. | Finds the question. | Where does the light come from? |
| | **3** Help place the question on KWHL Chart in W row. | Places the card on the chart. | |
| | **4** Teach/review vocabulary using time delay. | Points to vocabulary at 0-second delay; at 5-second delay (from array of 4 choices). | sunlight, day |
| Investigate | **5** Review prior concept statements and place them on KWHL Chart in K row. | Helps read prior Concept Statement Cards. | We live on the Earth. The sun and moon are in the sky. We can see the moon in the night sky. |
| | **6** Review science safety rule. | Observes and places rule on poster. | Don't put any materials used in the experiment on yourself or others. |
| | **7** Ask for prediction. | Makes prediction. | What makes light? I think the _____ makes the light during the day. |
| | **8** Fill in H of KWHL Chart. | Observes. | Eyes to see and hands to feel |
| | **9** Conduct experiment. | Engages with materials. | Demonstration of where sunlight comes from |
| | **10** Present concept statement using time delay (Trial 1). | Chooses vocabulary to complete statement (given 4 options). | The sun gives the Earth sunlight during the _____. |
| Describe | **11** Review what happened. | Listens. | |
| | **12** Present concept statement using time delay (Trial 2). | Chooses vocabulary to complete statement (given 4 options). | The sun gives the Earth sunlight during the _____. |
| | **13** Develop concepts using example/non-example. | Points to objects as directed. | light, dark, day (with a yes/no response) |

*(Table continues)*

## Unit Three/Lesson 4 Task Analysis *(Continued)*

| | Teaching Step | Student Response | Specific to This Lesson |
|---|---|---|---|
| Explain | **14** Review predictions. | Reviews predictions. | The (sun) makes the light during the day. |
| | **15** Suggest change to prediction if needed. | Makes change if necessary. | |
| Report | **16** Present concept statement using time delay (Trial 3) at 5-second delay. | Chooses vocabulary to complete statement (given 4 options). | The sun gives the Earth sunlight during the _____. |
| | **17** Help place completed concept statement on KWHL Chart in L row. | Places the card on the chart. | The sun gives the Earth sunlight during the day. |
| | **18** Present student report. | Completes Student Report. | My Science Log |