

Cynthia Russell

Lesson: Moon Phases – ESL emphasis on Oral Language

Grade: 6

Class: Science

Utah Core Standard 1: Students will understand that the appearance of the moon changes in a predictable cycle as it orbits Earth and as Earth rotates on its axis.

Objective 1: Explain patterns of changes in the appearance of the moon as it orbits Earth.

- a. Describe changes in the appearance of the moon during a month.
- b. Identify the pattern of change in the moon's appearance.

Content Objective:

Students will say the name of the moon phase by recognizing its picture.

Students will be able to explain the process of moon phases.

Students will keep data of the day's activities in a science journal.

Language Objective:

Students will participate in a hands-on demonstration of moon phases.

Students will match words with pictures

Students will put pictures in order and write moon phases under pictures.

Students will read the names of the phases.

Materials:

Styrofoam balls on pencils for each student

Bright light to represent the Sun – may use overhead projector

Blinds or other window covering.

Vocabulary words for word wall

Cut outs of moon phases and words to match

Science Journals

Vocabulary: **counterclockwise**, **new moon**, **first quarter**, **full moon**, **third quarter**, **right-hand side**, and **left-hand side**.

Procedures:

1. All students will have Styrofoam balls on pencils. Overhead projector will be in front of room. Teacher will lead class in a demonstration of moon phases, with the students following. The light represents the Sun. The ball represents the moon. And the student represents the Earth. Teacher introduces the word **counterclockwise**, and explains which direction to turn. Then students follow the demonstration. This will be done several times. First time, the teacher models and says the four main phases. Next, the students will participate and say the names of the phases while turning. Practice this together. Make sure the students are turning counterclockwise.

2. The next part of the lesson involves working with partners. Be sure to pair stage 1s with 2s or 3s, and pair 4s and 5s. Students will have postcards of the four moon phases and they will put the cards in order and match the word and picture cards. Have

students do the demonstration again to check their answers. Draw a diagram on the board as an example.

When you are sure students have completed the first part of the lesson correctly, turn out the light on the overhead. Pass out the picture cards for the four intermediate phases. Tell them each new card goes between two of the four phases they already know, but don't tell them where. Have partners decide where these phases should be in the order. Draw a diagram on the board to show how they will be placed. Students will explain to their partner what the different phases look like, and why the order they have decided on is correct.

Teacher may want to introduce the descriptors, **right-hand side, and left-hand side**. Ask for volunteers to tell their explanations. Have class decide which explanation was the most correct. Then, turn the light back on, and check.

3. Introduce the phase names of the other phases, and have the students put them under the pictures.

Have students give an explanation of why the moon appears to change shape. Have small groups decide on an explanation, and write their version on the board. You should have four or five versions on the board. Read them together, and help them decide on the one they will continue to use. Have them decide on a name for their new rule. ["Why the moon looks like it changes shape," or something to that effect.] Display their rule prominently.

4. Students will get out their science journals, and draw and write what they have observed.

#### Adaptations:

Stage 1 or 2: They will participate in the demonstration, and work with a partner matching cards and pictures. Match with stage 4 or 5 students. They will draw the moon phases in their journals and write the names of the phases using one word descriptors

Stage 3: Students will explain to their partner what the phases look like, and try to come up with a correct explanation. They can write sentences in their journals along with the pictures and words.

Stage 4 and 5: Along with drawing in their science journals, these students will be expected to write complete sentences and explain how the moon appears to change shape.

Grouping: Heterogenous partners.

#### Cognitive strategies:

Deduction -- they will look for patterns, and will explain it to their partner. They will see it, and check their work with hands-on demonstration. They will summarize in their journals.

Metacognitive: Think aloud – they will explain why they think it is the right order and the right explanation for the rule. Reflective – they will write in science journals.

Herrell and Jordan Strategies:

#31 -- Word Walls, including content words (New Moon, First Quarter, Full Moon, and Third Quarter; and process words (Counterclockwise, right-hand side, and left-hand side.)

#14 Manipulatives – the students will use objects to understand the concepts.

#15 Partner Work (Convince Me) Having students try to convince partners and the class of the right explanation forces them to use academic language.

#7 Language Experience Activity – Science journals allow students to use the activity to write in journal.

Assessment:

*Formative assessment:*

During the demonstration the teacher will check that students are turning counterclockwise. If not, teacher will remind them to turn opposite from the way a clock turns. Teacher will model revolving around a desk counterclockwise.

Have students repeat.

As students complete the card matching, teacher will move around the room to check and assess whether pictures and words are in the right place. If they don't, prompt them with ideas from the demonstration. Teacher will also listen to their conversations.

Students will provide an explanation and discuss why one explanation may be better than another.

*Summative Assessment:*

Students write in their journals. All students should have pictures of the moon phases, with names of the phases underneath. In addition, the teacher will grade the sentences and explanations based on student stages of language development.

Student Journal

Name \_\_\_\_\_ Date \_\_\_\_\_

My drawings:

Our class rule about Moon Phases:

Earth

Moon

Sun