

The Moon Lesson Two

Physically Looking at the Moon Phases

Standard II: 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.

Indicator a: Describe changes in the appearance of the moon during a month.

Indicator b: Identify the pattern of change in the moon's appearance.

Indicator c: Use observable evidence to explain the movement of the moon around Earth in relationship of Earth turning on its axis and the position of the moon changing in the sky.

Supplies: -Styrofoam ball on a stick
-Flashlight or lamp

Directions:

1. Give each student a Styrofoam ball with a dowel in it.
2. Turn on lamp or flashlights.
3. Have the students stand with the ball toward the light.
4. Have the rotate around slowly until they reach a 90-degree angle.
5. Have the watch the shadow on the moon.

Assessment and Observations

1. What are you representing? (The earth)
2. What is the light representing? (The sun)
3. What is the ball moving around you representing? (The moon)

Identifying the new moon

4. Turn so you are facing the sun with the moon in front of you.
5. What does the ball look like as you are looking into the light? (There is no light on this side of the moon. It is a new moon)

Turning to the first quarter

6. Turn slowly to a 45-degree angle to you left. Watch the light as you turn. What does the ball look like as you are at this position? (The light is less than half way on the right side of the moon. This is a waxing crescent moon.)
7. What did you notice about the light as you were turning? (It got bigger on the moon.)
8. Turn at another 45-degree angle to your left. You have now turned 90 degrees. What does the ball look like as you are looking at this position? (Half the light is on the right side of the moon. This is a first quarter moon.)
9. What did you notice about the light as you were turning to this position? (It got bigger on the moon.)

Turning to the full moon

10. Turn at another 45-degree angle to you left. Watch the light as you turn. You have now turned 135 degrees. What does the ball look like as you are at this position? (The light is more than half way on the right side of the moon. This is a waxing gibbous moon.)
11. What did you notice about the light as you were turning to this position? (It got bigger on the moon.)
12. Turn at another 45-degree angle to your left. Watch the light as you turn. You have now turned 180 degrees. What does the ball look like at this position? (The whole moon is filled with light. It is a full moon.)
13. What did you notice about the light as you were turning to this position? (It got bigger on the moon.)

Turning to the third quarter moon

14. Turn at another 45-degree angle to your left. Watch the light as you turn. You have now turned 225 degrees. What does the ball look like at this position? (The light is more than half way on the left side of the moon. This is a waning gibbous moon.)
15. What did you notice about the light as you were turning to the position? (It got smaller on the moon.)
16. Turn at another 45-degree angle. Watch the light as you turn. You have now turned 270 degrees. What does the ball look like at this position? (Half of the light is on the left side of the moon. This is a third quarter moon.)
17. What did you notice about the light as you were turning to this position? (It got smaller on the moon.)

Turning to the new moon

18. Turn at another 45-degree angle to your left. Watch the light as you turn. You have now turned 315 degrees. What does the ball look like at this position? (The light is less than half way on the left side of the moon. It is a waning crescent moon.)
19. What did you notice about the light as you were turning to this position? (It got smaller on the moon.)
20. Turn at another 45-degree angle. Watch the light as you turn. You have now turned 360 degree or a full turn. What does the ball look like at this position? (I see no light on the moon. I am back to the new moon.)
21. What did you notice about the light as you were turning to this position? (It got smaller until it finally disappeared.)

Conclusions

22. What happened to the light on the moon as the ball went from a new moon to the full moon position? (It grew on the right side.)
23. What happened to the light on the moon as the ball went from a full moon to the new moon position? (It got smaller on the left side.)
24. Does the light on the moon really get bigger and smaller on the moon? (No, half the moon is always lit on the moon. We just can't see it.)
25. Why does the light on the moon seems appears to get bigger and smaller as we view it from day to day? (Because the angle of light we see as the moon goes from a new moon to the full moon seems to get larger and we see more light each day. Then the angle of light we see as the moon goes from a full moon to a new moon seems to get smaller and we see less light each day.)