

Universe Lesson Nine

The Pattern of the Zodiac Constellations in the Night Sky

Standard IV: Students will understand the scale size, distance between objects, movements, and apparent motion (due to Earth's rotation) of objects in the universe and how cultures have understood, related to and used these objects in the night sky.

Objective 2: Describe the appearance and apparent motion of groups of stars in the night sky relative to Earth how various culture have understood them.

Indicator a: Locate and identify stars that are grouped in patterns in the night sky.

This lesson has to do with the Zodiac paper that shows all the Zodiac constellations. The idea here is to understand why positions of the stars in the sky seem to change each month. It has to do with the position of the Earth in space in relationship to the sun.

What to do before the lesson: (You can see this on the Zodiac paper.)

1. Run off the Zodiac paper.
2. Get some Popsicle sticks, two per student
3. Write on one of the Popsicle sticks that each student will get the word "East"
4. Write on one of the Popsicle sticks that each student will get the word "West"
5. Download and print off the names of the Zodiac Constellations.
6. Get a big ball for the sun.
7. Put the 12 Zodiac Constellations names on the four walls in the gym in order, spacing them evenly apart.
8. Students need their science journals and a pencil.

What to do for the lesson: (You can see this on the Zodiac paper)

1. Give each student a Popsicle stick that says "East" and a Popsicle stick that says "West". Have them put "East" stick in their left hands and the "West" stick in their right hands.
2. Go in the gym and put the ball (sun) down on the center of the room. Have the students stand at least 10 feet away from the ball in a circle facing the ball (sun).
3. Have the students put their arms straight out from their sides.
4. Have the students turn a quarter turn to the right so their left arm is facing the sun and the right arm is away from the sun. This represents the rising of the sun.
5. With their arms always being straight out, have them observe which Zodiac signs they see at sunrise from their left arms to their right arms. Have them write them

in their journals then go back to their same positions again. (Everyone's will be different because they are all in a different Zodiac constellation.)

6. Have them turn slowly counterclockwise.
7. As they turn have them notice which constellations they would not be able to see because the sun is too bright. Have them write them down.
8. Have them keep turning counterclockwise until their right arms are facing toward the sun. Now the sun is beginning to set. As the sun is setting have them identify the Zodiac signs that are in the sky as the sun is setting from their right arms to their left arms. Have them write them down.
9. Have them keep turning counterclockwise slowly. Ask them what do they see happening to the constellations on the right? What do they see happening to the constellations on the left?
10. Have them keep turning until the sun is behind them (midnight). Have them observe the constellations they see and write them in their journals.
11. Have them keep turning counterclockwise until their left arm is facing the sun, which is sunrise, and they will be back where they started.
12. How many constellations can they usually see at once as they are turning?

So the students can have a different experience in another month, have them walk in a circle around the sun at your command. When each has reached another constellation of your choice have them stop. Repeat the instructions for a different month.

When they have written the Zodiac constellations they see for the two months go back to class. If there is time, have them compare what they wrote down with the Zodiac signs that are listed in their star finder to see if they are correct.

Have a discussion as to why some disappear in the night and some show up during the night.