Lesson 2: Motion of the Sun

This lesson is designed to show students the cycles of day and night, shadows, and the position of the sun at different times of the year.

What to Test:
Does the Model earth work?

Program: 24HourCycle.py

Materials:

- Scissors
- Tape
- Stand

Seasons:
Cut/tape the model of earth and position in the middle of the theater on the tilted stand. Switch the white light from the left side to the right of the theater. This shows how Earth's tilt affects the seasons by changing the direction of light based on orbit. It may help to show how a circular orbit changes which hemisphere is directed toward the sun first. Then ask the students which season we are in and then to change the light in the theater to correctly show Earth's position in its orbit. Finally explain how seasons work: The amount of light in summer that hits that part of the earth facing the sun is more direct where the winter hemisphere gets the same light, only spread over a greater surface area.

Day and Night:
Replace model Earth with a flat landscape. This can either be one the is drawn with a background or simply ask students to imagine a landscape as if they were standing on it. Then hit the button for day and night and watch the cycle of day and night change over earth. Ask the students why the sky is blue and changes colors throughout the day and then explain why it really is.

Shadows:
With the day night cycle and the landscape still in mind. Have the students draw and cut out fun and creative shapes to show shadows. Change the light source from left to top to right as in the day night simulation to show

the shadows moving over the course of the day. Another option is to show how direct sunlight produced no shadows through this video: https://www.youtube.com/watch?v=IJhgZBn-LHg