

Misconceptions about Why Seasons Occur

Lesson Title: *The Four Seasons*

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Teacher Background

An educational video entitled, *A Private Universe* (Pyramid Film & Video), features a study that asked Harvard graduates to explain why we have seasons. In the film graduates gave the same wrong answer that many people do: that seasons are caused by earth getting closer (or farther) from the sun.

If possible, we recommend that you watch this video before teaching this lesson. You can also view short excerpts from the video *A Private Universe* at the links below:

- “A student explains the orbit of earth and the sun,”
http://www.learner.org/teacherslab/pup/class_acts_movie.html
- “Students explain the seasons and moon phases,”
http://www.learner.org/teacherslab/pup/about_acts_movie.html

Following are some common misconceptions regarding the seasons. This lesson should help address some of these.

- Often students who believe that the seasons are caused by earth’s distance to the sun think that earth orbits the sun in an elongated elliptical path and that this is what causes earth’s distance from the sun to vary enough to cause the seasons. In fact, earth’s orbit, while elliptical, is nearly a perfect circle.
- Others may think that the sun is not in the center of earth’s orbit, thus causing earth to be closer or farther away from the sun at different times. While it’s true that the sun is at one focus of earth’s elliptical orbit, the fact that the orbit is nearly a perfect circle means that the distance from earth to the sun remains nearly constant all year.
- Even people that know that earth’s tilt has something to do with the seasons might think that there is something about the tilt that causes earth to be much closer to the sun at certain times of the year. In fact, the tilt does not make any significant difference in the distance of earth to the sun.