

3D-model: Earth's seasons

Koen Meirlaen

Leiepoort Deinze campus Sint-Hendrik, Belgium (meirlaen.koen@sinthendrik.be)

A lot of subjects in geography and geology are linked to the seasons of the earth. Most of the students think that the earth's seasons are caused by the differences in the distance from the sun throughout the year. So as a teacher I tried year after year to explain the motion of the earth around the sun. Even when I used animations/movies/... it still seemed difficult for the students to understand the 3D-situation. Most of the animations only show the start of every season but it's important to demonstrate to the students the motion of the earth during a year so they can see that the tilt of our planet causes the seasons. The earth's axis is tilted by 23.4 degrees to the plane in which it travels around the sun, the ecliptic.

So I started to work on a 3D-model on a scale to use in a classroom. It measures approximately 2m by 1m. You can buy all the materials in DIY-shop for less than € 100: wooden plank, lamp, styrofoam spheres (= earth), ...

I have been using the model for over 4 years now and it's very nice to work with. You can involve the students more and let them investigate for themselves what causes the seasons. The model demonstrates the start of every season, why it is dark for several months in several places on Earth. They can draw the positions of the Tropic of Cancer, Tropic of Capricorn, Arctic Circle and Antarctic Circle on the styrofoam spheres. Also the difference between day and night is well shown on the globes.

A lot of subjects in geography and geology are linked to the seasons of the earth: the changes in weather, ocean currents, winds, tropical storms, vegetation, fauna and flora, hours of daylight, ... even economy, migration and social health. This way the model can be used in many lessons during the year.

The poster session will demonstrate how you can make the 3D-model, some exercises, ...