ACTIVITY AT HOME

PINK PALACE MUSEUM

Space Science

PRECESSION

Demonstrate the movement of the earth's axis.

Materials

Modeling clay

Round toothpick

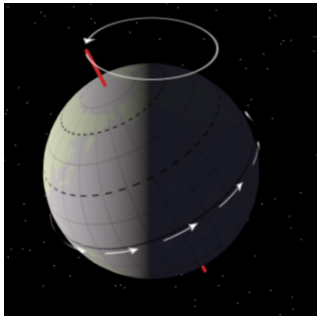

Photo credit: nasa.gov

Procedure

- Shape a piece of clay into a ball about the size of a marble.
- Push the toothpick through the center of the clay ball so that just the tip of the toothpick sticks out the other side.
- Place the tip of the toothpick on a table.
- Twirl the long end of the pick with your fingers, let go, and let it spin.
- Observe the movement of the top of the toothpick. (Note: The ball spins poorly if the toothpick is not through the center or if the clay is not round.)

Results

As the clay ball spins, the top of the toothpick moves in a circular path.

Why?

As the ball spins, the weight shifts because the ball is not perfectly round. The earth, like the clay ball, wobbles as it rotates because of the slight bulge at the equator. The earth's axis (the imaginary line through the poles of the earth) moves in a circular path as the earth wobbles. This movement is called precession. The top of the toothpick makes many revolutions as the clay ball spins, but it takes 26,000 years for the earth to wobble enough for its axis to make one complete turn.

This activity was adapted from *Interactive Science*.

To learn more about space science, check out the *Sun, Earth, Universe* exhibit at the Pink Palace Museum.