Sci-Map Site
Westside Park

Name of Activity
Playground Physics While You're There - Swinging

Materials
Access to at least one swing
Plain white paper
Pencils, pens, or markers

Procedure
Ask a student volunteer to sit on a swing, without pumping, and another student to give him or her a few solid pushes. Have the rest of the class stand safely to one side and observe.
Ask students to watch the swing action at three key points: the two peaks of the motion and the lowest point. Next, challenge them to draw a diagram of the three points and identify the force or energy that controls the movement. Kinetic energy is the middle part of the swinging, when the swing is approaching its peak on either side. Potential energy is the peak of the swinging on either side, when the swing is temporarily still. When the swing falls from either peak to the ground, the force of gravity is acting upon it.

The Science Behind It
What makes a swing swing? When someone pushes you on the swing, they increase your kinetic energy. The push acts as an external force that propels you to swing forward. Another way to get height on a swing is to simultaneously pump your legs and rock forward and back. Pumping your legs increases your potential energy, and leaning forward raises your center of gravity slightly — all of which get you to swing higher and higher. Meanwhile, the pull of gravity, which draws all objects to Earth, works to pull the swing toward the ground on its downward trajectory.

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