HU-GK 12 Program 11-15-07

Activity:

Title: "Drop it like it's Hot!"

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DCPS Standards:

(ChaLC Goal)**:**

8.5.2.
Describe kinetic energy as the energy of motion (e.g., a rolling ball) and potential energy as the energy of position
or configuration (e.g., a raised object or a compressed spring).
8.5.3.
Investigate and explain how kinetic energy
can be transformed into potential energy, and vice
versa (e.g., in a bouncing ball).

Goals:

1) The students will understand introductory concepts of kinetic and potential energy using a demonstration

Objectives:

1) Given introductory information on kinetic and potential energy the students will answer questions about energy concepts through an interactive classroom discussion.

Background:

Kinetic energy is energy of motion. This energy all depends on an object's mass and speed. Kinetic energy increases as mass increases and speed increases. Potential energy is the stored energy that an object has due to its position or chemical composition. Therefore, a ball's position above the ground gives it potential energy. It is much easier to tell if an object has kinetic energy because the object is actually moving but potential energy becomes it more difficult to evaluate because it can come from several different sources. Gravity is a source that

has a major effect on potential energy as well. Depending on an object's mass, gravity can help to increase the object's potential energy, which essentially increases kinetic energy.

Prerequisite Knowledge:

The students should have some prior knowledge of gravity and density and their effects on objects.

Materials:

1) Baseball
2) Tennis ball
3) 2 Empty soda cans
4) Meter stick

Set up:

Depending on the classroom dynamic, this experiment could be done as a demonstration with the entire class or a group lab activity. This will be left up to the teacher's discretion.

Procedure:

1) Compare the size of both the baseball and tennis ball
2) Hypothesize which ball has the most potential energy and explain why.
3) Hypothesize which ball will ultimately have the highest kinetic energy when released
4) Place soda can on its side on the floor
5) Drop each ball from approximately 1 meter (length of meter stick) from the ground onto a soda can.
6) Observe which ball causes the biggest indentation on the can.
7) Explain why this happens and what effect size, mass and speed (caused by gravity) have on potential and kinetic energy.