

## **Kinetic and Potential Energy at Work**

**Lesson Title/Topic:** Kinetic and Potential Energy at Work

This was a co-teaching lesson plan with another seventh grade student teacher.

**Grade Level:** 7th grade

**Learning Goals:** The goal of this lesson is for students to understand how kinetic and potential energy work and how they affect one another. Students will understand the background of kinetic and potential and work towards understanding the effects on their daily lives.

P.EN.06.11 Identify kinetic or potential energy in everyday situations (for example: stretched rubber band, objects in motion, ball on a hill, food energy).

- Students will identify what kinetic and potential energy are.
- Students will give examples of kinetic and potential energy in the classroom.

P.EN.06.12 Demonstrate the transformation between potential and kinetic energy in simple mechanical systems (for example: roller coasters, pendulums).

- Students will recognize and explain the transformation from potential to kinetic energy.
- Students will recognize and explain the transformation from kinetic to potential energy.

S.IP.M.1 Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.

- Students will use a roller coaster and SMART Board to further understanding of the main ideas about energy.

### **Unpacking each learning goal:**

Students will develop an overall understanding of kinetic and potential energy. Students will learn how to distinguish between kinetic and potential energy. They should be able to look everyday objects and explain what force is acting on it and why. Students should be able to define potential energy, kinetic energy and energy in general.

The roller coaster will test their knowledge of simple machines. They will apply the basic knowledge of kinetic and potential energy and will apply it. They will be able to explain why the cart is able to move on the tracks and the changes throughout.

Students will be working together to come up with an understanding of kinetic and potential energy. Students will discuss what energy is and as a whole, work together to develop kinetic and potential energy. The second day will push students to question what they are learning by making their own roller coaster using the basic understandings of kinetic and potential energy.

### **Guiding/Central Question:**

- How does kinetic and potential energy affect our daily lives?
- What is kinetic and potential energy?
- What would your roller coaster look like? The first hill has to be the highest because the potential energy has to be at a maximum in order for the roller coaster to make it throughout the track (this question will depend on how well day one goes and their understanding)

### **Materials:**

- Smart Board
- Internet to access <http://www.learner.org/interactives/parkphysics/coaster>
- Balls of various sizes

### **Lesson Objective(s):**