**5E Template- Science**

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| **Name: Jessica James** | | **Date: 7/2011** |
| **Content Area: Science** | **Grade Level(s): 6** | **Topic(s): Energy** |

**Standards (SOL)**

6.1 The student will plan and conduct investigations in which

a) observations are made involving fine discrimination between similar objects and organisms;

c) precise and approximate measurements are recorded;

e) hypotheses are stated in ways that identify the independent (manipulated) and dependent

(responding) variables;

f) a method is devised to test the validity of predictions and inferences;

g) one variable is manipulated over time, using many repeated trials;

h) data are collected, recorded, analyzed, and reported using appropriate metric measurements;

i) data are organized and communicated through graphical representation (graphs, charts, and

diagrams);

k) an understanding of the nature of science is developed and reinforced.

6.2 The student will investigate and understand basic sources of energy, their origins,

transformations, and uses. Key concepts include

a) potential and kinetic energy;

**Objectives (UKD’s)**

I can understand potential and kinetic energy.

**Materials & Resources**

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| * Several types of small balls (golf balls, ping pong, golf, metal, bouncy) * Ramp with numbers equidistance apart * Cup or slider to catch balls * Meter stick | * Graph paper * Experimental Design Sheet * Colored pencils * Masking tape |

Safety Considerations

Remind students to not throw balls

**Engage – Time Estimate 2 minutes**

Have student pick a ball and roll it down the ramp*.*

Ask students to discuss in pairs: How could you make this ball push the cup/slider further?

**Explore – Time Estimate 45 minutes**

Have students design an experiment that will change the distance the slider moves*.* Students could change the height on the ramp or the type of ball used.Students should graph findings.

**Explain -- Time Estimate 10 minutes**

Students who changed balls: What happened to the potential and kinetic energy as the balls were changed?

Students who changed the height: What happened to the potential and kinetic energy as the height increased?

Have groups share their findings

**Extend -- Time Estimate 30-45 minutes**

Have students make hypothesis about the digital roller coaster lab found on <http://www.jason.org> under the “Infinite Potential” mission digital labs.

They can change the number of cars or the height of the hills.

**Evaluate -- Time Estimate 5 minutes**

Exit Slip: Using a sketch of the model have students draw and explain the where the highest level of kinetic and potential energy can be found.

**Plans for Diversity**

Some students may need assistance recording the data and creating the experiment.

**Connections**

This information will continue to be used throughout the energy unit.