**Modeling module for Biology Standards 3.3 and 3.5 Metabolism**

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**DRIVING QUESTION:**

How much energy do you obtain from the food you eat?

**INDIANA STANDARD 3.3 and 3.5:**

 Recognize and describe that metabolism consists of all of the biochemical reactions that occur inside cells, which include the production, modification, transport, and exchange of materials that are required for the maintenance of life.

Describe how energy from the sun flows through an ecosystem by way of food chains and food webs and how only a small portion of that energy is used by individual organisms while the majority is lost as heat.

**OBJECTIVE:**

Students will understand:

 1) Where the energy from the food goes?

2) 10% of energy is passed up to the next level

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**WHITE BOARD QUESITONS:**

1. What is a calorie?
2. Are all calories alike?
3. What does a calorie provide?

**ACTIVITY 1:**

Give students plate of (all the same type) food and ask them to separate what 200 calories would look like. (CHANGE FOOD TYPE FOR EACH CLASS)

Discuss and show a plate of 200 calories of that food.

**ACTIVITY 2: Burning Food**

Use Driving Question

Have students hypothesize and write a procedure on how to find the amount of energy in the food

*Teacher provides:* foil, paper clips, food types, potato slice, beaker, thermometer,

 ring stand, wire mesh, lighters, balance

White board discussion to tweek the procedures

Carry out experiment, obtain results/data, and write-up

White board discussion: What happened? Did you answer the question?

***? ? ? Do you need to do some calculations to figure how much energy you get? Where does the rest of the energy go? ? ? ?***

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