Heat it Up
Popcorn and Bicuits with Butter
Grade 5

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References:

- http://www.gk-12.osu.edu/resources1.html

Biscuit Chemical Change Activity by Kelly Denney, Mrs. Berridge, Mrs. Nolan and Mrs. Skopin

Benchmarks & Objectives:

PS-1: Define temperature as the measure of thermal energy and describe the way it is measured.

PS-2 Trace how thermal energy can be transferred from one object to another by conduction.

Materials:

- Microwave Popcorn works, but air popper best
- Biscuits made during chemical change activity (or store bought for this activity alone)
- Butter (kept at room temperature for a few hours for easy melting)

Initial Demonstration:

Ask the students what heat is? How is it measured? What is the difference between frozen water, water at room temperature and boiling water? Have the kids draw diagrams of the states of matter with water as the example. They should remember from fourth grade, if not review this concept. You may draw molecular spacing on the board (close together for solid ice, more spaced apart and moving some for liquid water, and moving most rapidly and the most spacing for gas.

Procedure 1, Popcorn:

1. Have the class observe popcorn as it is air popped.

2. What happens to the speed of the moving popcorn as more heat is added? What happens to the spacing of the popcorn kernels? What happens to matter as heat is added? (The kids will grasp that the molecules move faster and are spaced apart).

3. How is making popcorn a good model for heating up molecules for instance melting ice?

Procedure 2, Biscuits:

1. Give students all a warm biscuit. Ask them what will happen if they put a pat of butter on their biscuit? They should write their hypotheses. Let them know that you understand they probably know what is going to happen, but they should attempt to explain it in terms of heat.

2. Students should test their hypotheses by putting some butter on their biscuit.

3. Give them the vocabulary word conduction, the transfer of heat from a region of higher temperature to a region of lower temperature. Ask them to brainstorm where heat is being conducted in the biscuit and butter experiment?

Discussion:

1. How does the biscuit model relate to the popcorn model? (Both describe heat, adding heat increases energy and motion, the motion of heat is from hottest to coldest).

2. How do we measure thermal energy? (This is a thought question to gear the kids up for their next exercise- Making thermometers).

3. What is the difference between something that is hot or cold (like solid and melted butter) (this is to see if the kids understand that cold is under the category of heat too, 'Heat' describes the flow of energy from something hot to something cold.