

Project FOCUS
Best Lessons
THIRD GRADE

Title of Lesson: The Nut Inferno

Theme: Physical Science

Unit Number: [Click here to enter text.](#)

Unit Title: Heat Energy

Performance Standard(s) Covered (enter code):

S3CS1 (a)

S3CS3 (c)

S3P1 (a) (d)

S3CS8 (a) (b)

Enduring Standards (objectives of activity):

Habits of Mind

- Asks questions
- Uses numbers to quantify
- Works in a group
- Uses tools to measure and view
- Looks at how parts of things are needed
- Describes and compares using physical attributes
- Observes using senses
- Draws and describes observations

Content (key terms and topics covered):

Chemical energy transfer, stored energy, calories (food energy), experimental design, scientific observations

Learning Activity (description in steps)

Abstract (limit 100 characters): The purpose of the Nut Inferno Activity is to provide a safe, hands-on and very visual way for third-grade science students to gain an understanding of how energy is stored within organisms, and that that energy can be measured.

Details: Start the activity by talking about energy as they understand it - do they have more in the morning, the afternoon, after eating? Where do they think it comes from, where does it go? Can it be measured? Why or why not? Then you introduce the nuts and talk to them about the nuts being like our bodies. The nuts have energy, but you can't see it. This may be hard for some kids so stop and take a moment (if needed) to ask about how we "see" the energy in our bodies, not until they are in use. In nuts, it is the same concept. You can't see the energy until you use the nut, so we have to figure out a way to use the nut, and also measure that use. Let the students brainstorm. Show them the materials and talk about experimental design and why measurement is important - because then we can "see" the energy. You should eventually be able to steer the conversation back around to the making of your device. You should already have one prepped in case something goes wrong with the one they attempt to create. If you have time, show them the [video http://www.youtube.com/watch?v=YV8vOVabjF4](http://www.youtube.com/watch?v=YV8vOVabjF4) Once you actually run through the experiment - showing that the energy in the nuts can be measured directly by how hot the water gets, they will start to get the connection. Don't forget about safety!



The Flat pan goes underneath the set-up. Set the large coffee can (the outside of your inferno) in the pan. The small can gets filled half-way with water. Poke a sewing needle into one of the synthetic corks and set the cork into the pan, inside the large can. The hanger should be threaded through the small can, used as a handle. Place a nut of your choice on the other end of the needle and light on fire. The small can of water sits just above the flame, the way a tea kettle would sit above a fire. Take the temperature of the water in the small can as you get started, and then at the end, after about 2 minutes. Blow out the nut, swap out types of nuts and repeat process. You will begin to see a difference in how hot the water gets, depending on the type of nut. Make sure to always start with room temperature water or else your data will be thrown off - ask students why this is.

Materials Needed (type and quantity):1 **Note: Materials listed will make one Nut Inferno - in class, we actually made two set-ups so that we could have more of the class engaged and could get more of the nuts compared in the time allowed. Adjust the activity for the size of your class accordingly. 1 Large Coffee Can – emptied of contents with both top and bottom removed. 1 Small can (ex .corn) – emptied of contents with only top removed. 1 Wire hanger, Heavy duty masking tape or gaff tape, Hammer/large nail, Long-handled safety lighter, Several (2-3) synthetic corks, Several (2-3) sewing needles, Aluminum pan (ex. Roasting pan), Water (2-3 cups) and a variety of nuts (peanuts, cashews, pistachios, etc.)

Notes and Tips (general changes, alternative methods, cautions): Safety precautions should be observed at every step. All materials should be prepped and only an adult should handle the lighter. Also it is wise to conduct this experiment outdoors whenever possible to avoid running into problems with open flames and fire codes in many school buildings.

Sources/References:

- 1) <http://www.youtube.com/watch?v=YV8vOVabjF4>
- 2) Amazing Science Experiments for Amazing Kids
- 3) Chemical Energy in Food

