

i3 STC Kit Extension Activities

North Carolina

Grade: 4 th Grade	
Kit Name: Electric Circuits	
Essential Standard(s): (List number, standard, clarifying objectives where appropriate)	
3.P.3 Recognize how energy can be transferred from one object to another. 3.P.3.1 Recognize that energy can be transferred from one object to another by rubbing them against each other. 3.P.3.2 Recognize that energy can be transferred from a warmer object to a cooler one by contact or at a distance and the cooler object gets warmer.	
Unpack the Standard (What does it mean?? What is the “Big Idea”?): -How can energy be transferred from one object to another? -What is temperature? -How do molecules behave during the transfer process? -What makes objects feel warm and cold? -How does heat transfer affect my life? -How does heat transfer affect the world? -What happens to a cooler object when it comes in contact with a warmer object? -Is distance a factor in energy transfer? -Why is energy conservation important? -How does energy conservation affect me? -How does energy conservation affect the world?	
What is the Engaging (will get the student interesting) Essential Questions that the students will be trying to answer as a result of this Extension?	
-I can describe how heat transfer affects my daily life. -I can tell how heat transfer is important to the world. -I know that energy is a property of matter that is related to doing something - heat, chemical change, motion, light, magnetism, nuclear change, electrical. -I know that heat is transferred from a source to a receiver. -I can use observation to compare how different surfaces vary (smooth, rough, bumpy, air pockets). -I know that the type of surface affects energy transfer. -I can describe the relationship between the kinds of surfaces and the transfer of heat energy. -I can explain that the flow of heat energy between different surfaces is different depending on the surface of the objects.	
Which activities in the kit touch on the Standard(s) and how can they be adjusted to better address the Standard(s)?	
There are no activities that touch on this standard, so extensions activities are included in this form.	
Kit Activity	Extension Suggestions

Activities:**Balloon Activity:**

Conduct the balloon activity:

Students will work with partners to observe what happens when a balloon is rubbed on a shirt and then in hair. Give students a balloon. Have the students rub the balloon against their shirts and their hair to generate static electricity.

Partners will observe what happens to the hair as the balloon is slowly pulled away.

Record observation in a chart.

Recess extension:

Students can observe this on the playground as well.

Encourage three or four students to go down the playground slide while other students stand under the slide. Students should be able to observe hair standing up on the students standing under the slide.

Static electricity:

Getting to Know Electricity (Author Unknown; found in Media Center) (Lexile 650). Have students reflect on the activity and the reading in their science journals.

Create a circle map for static electricity

Vocabulary: static electricity, atom, transfer

Explore Temperature of Objects

(Activity can be found on the JCS Live-binder: Science Specific, Gray tab 3.P.3 Energy Transfer)

Students will organize a group of items from coldest to hottest first by touch and then by temperature.

First, have the students organize the objects from coldest to hottest by touch. Have students compare their arrangements and discuss similarities and differences. Have students use a thermometer to find actual temperature of the objects. Compare how the actual measurements compare with the arrangement created by touching. Record data in a chart in science journal.

Weather Reading:

Print the article from the link below for students to read independently or with a partner.

Once students have had a chance to read independently, discuss key words in the article.

Some words are highlighted. Key words to discuss would be mercury and molecules.

<http://scienceforkids.kidipede.com/physics/weather/temperature.htm>

After reading the article have students:

Write a cause and effect relationship that occurs in the article.

Write a reflection in your science journal –

Why is knowing the temperature of things important?

List three situations in your life when temperature is crucial.

Vocabulary: temperature, thermometer, molecules, mercury

Additional Suggestions (Literature connections; online resources):

Literary Text Considerations

- Thunder Cake by Patricia Pollaco
- Trapped by the Ice by Michael McCurdy, Lexile: 790
- Non-fiction text - Energy and Transfer of Energy
- Energy by Matt Mulins, Lexile: 770
- Energy by Way Steve and Gerry Bailey, Lexile: 850
- Energy by Nigel Saunders and Steven Chapman, Lexile: 910

Resources (include digital resources)

[Click here for Additional Resources for Energy](#)

- The Magic School Bus Getting Energized - Using New Energy Sources by Joanna Cole and Bruce Degen
Lexile: 600
- Energy by Matt Mulins; Lexile: 770
- Energy by Way Steve and Gerry Bailey; Lexile: 850
- Energy by Nigel Saunders and Steven Chapman; Lexile: 910
- Atoms and molecules [electronic resource] by Molly Alioan
- Getting to Know Electricity author unknown; Lexile: 650
- <http://www.kids.esdb.bg/science.html> - (biographies about inventors who have researched heat and energy transfer)
- <http://www.youtube.com/watch?v=7Y3mfAGVn1c&safe=active> - (you will have to download the youtube video into keepvid.com and download on to your stick to show to students)
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- <http://app.discoveryeducation.com/search?Ntt=energy#sellItemsPerPage=20&intCurrentPage=1&No=20&N=0&Ne=&Ntt=energy&Ns=&Nr=&browseFilter=&indexVersion=&Ntk=>
- Understanding Heat Transfer, Conduction, Convection and Radiation
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- <http://app.discoveryeducation.com/search?Ntt=energy#sellItemsPerPage=20&intCurrentPage=0&No=0&N=0&Ne=&Ntt=energy&Ns=&Nr=&browseFilter=&indexVersion=&Ntk=>
- <http://www.sciencekids.co.nz/gamesactivities/keepingwarm.html>
- http://www.education.com/science-fair/article/physics_sliders/
- <http://sciencenetlinks.com/lessons/when-things-start-heating-up/>
- <http://www.powersleuth.org/docs/EHM%20Lesson%205%20FT.pdf>
- <http://www1.eere.energy.gov/kids/renergy.html> (energy conservation resource for extension)
- <http://www.affordablelamps.com/guide-to-learning-about-solar-power.html> (energy conservation resource)
- <http://tiki.oneworld.net/energy/energy.html> (energy resource)
- <http://www.timeforkids.com/news/young-voices/36206>
- <http://www.timeforkids.com/news/earth-day/10951>
- <http://www.timeforkids.com/news/life-saving-inventions/39251>
- http://www.energystar.gov/index.cfm?c=kids.kids_index
- http://www.ehow.com/list_7258523_energy-conservation-tips-kids.html
- <http://www.livestrong.com/article/125158-energy-conservation-tips-children/>
- <http://www.save-money-with-alternative-energy.com/energy-conservation-for-kids.html>
- http://wn.com/energy_conservation_for_kids (videos)
- <http://www1.eere.energy.gov/kids/>
- <http://www.sciencenewsforkids.org/2004/10/cold-house-hot-house-green-house-2/>

[-http://www.sciencenewsforkids.org/2012/07/fracking-fuels-energy-debate-and-controversy/](http://www.sciencenewsforkids.org/2012/07/fracking-fuels-energy-debate-and-controversy/)
(could be a good acceleration resource)