Title	**Electricity Unit**
School	**Bea Underwood Elementary**
Grade Level	**4th and 5th grade**
Discipline(s)	**Science**
Specific topic:	**Electricity**
Length:	**12 days**

Summary
Students learn about electricity both static as well as current. Students will explore circuits and be able to explain what makes a good conductor of electricity. They will also explain how electricity gets to your home. An expert from Holy Cross Energy will come to talk with the students about electricity and safety. Students will record a PSA for the local radio station for their final product.

Guiding Questions
What is electricity and how is it generated? **How does electricity get to your home?** **How do electric circuits work?** **How can I keep myself and my family safe around electricity?**

Standards Assessed in the Unit	
Science	**Standard: 1. Physical Science**

	1. Energy comes in many forms such as light, heat, sound, magnetic, chemical, and electrical
Literacy	***Standard: 2. Reading for All Purposes*** *1. Literary texts are understood and interpreted using a range of strategies* *2. Ideas found in a variety of informational texts need to be compared and understood* ***Standard: 3. Writing and Composition*** *2. The recursive writing process creates stronger informational and persuasive texts for a variety of audiences and purposes*

Daily Plans	
Learning Target	I can explain the science of static electricity. I can explain how electrons move to create electricity.
Day 1-2	**Words to Know pg 18** **(Frayer Model)** static electricity nucleus neutrons protons electrons repel Orbit **Activate:** Static Electricity Experiment **(KWL about electricity)** 1. Inquiry based exploration stations: Give students 20 minutes to explore at the following stations. **Supplies: balloons, combs** A. Rub a balloon to your hair and stick it to the wall. Students can make observations of what affect the motion has to your hair, balloon, etc.

	B. Ripped paper- sticks to balloon after rubbing on hair C. Salt and pepper mix -pepper will stick to the balloon or combs D. Online practice with exploring with static electricity. Set up on smartboard or so kids can see how the electrons are moving. 2. Debrief: make sure to fit in a debrief of what students noticed and wondered about the stations. You might make a class T-chart on chart paper so that when these come up again kids can remember their thinking to answer questions they have down road. Remember this is an inquiry lesson, let the kids grapple and question. **(I noticed, I wonder chart)**

Learning Target	I can describe how energy transfers throughout an electrical circuit. I can explain the difference between static and current electricity I can demonstrate what makes a good conductor or good insulator of current electricity I can create a simple circuit
Day 4-5	**Words to Know** **pg 22 Energy** **Frayer Model or Quiz Quiz Trade cards** circuit terminals conductors Insulators **Activate:** Whole group exploration: Observation Experiment Using Makey -Makey boards. Students will hook up objects to see if the bongo drums will play and record which objects transferred enough current to make the bongo drums play and which didn't. Using the chart they created they then share out their findings to be written on a anchor chart in the front of the classroom. From this students are asked to see if they notice any patterns to what worked and what didn't. **New Learning: (Close Read or TWA)** Energy: Chapter 2 pgs. 21-23 Watch the episodes 2-3 of Nasa Why Files

	Application Online circuit simulation circuit website Circuit Kits: Students work in pairs with a circuit kit to try to recreate simple circuits and test out whether they are open or closed. Students fill out lab sheet from pg 40 & 42 of the NASA why files packet. **Assessment** Students must write short report of what they did to create a closed simple circuit and include their findings and results from pg 42 (insulators and conductors) lab sheet. **(POWER)** **Debrief:** What were some of the connections to the reading?

Learning targets	I can explain how electricity gets to the home. I can create a diagram of the how electricity travels to the home I can create a radio PSA showing how to be safe around electricity I can collaborate with my group to produce a high quality product that will inform the community.
Day 6-12	**Activate** Finish watching the NASA Why files episode 4 Students work on the Meter Reader Practice Sheet pg 60 Nasa Why Files packet. Students learn to read a meter. **Application:** Hand out Behind the Switch Newspapers to students. Have students look at the cover and write on sticky notes things they see that are related to electricity **(TWA or PreP)** **New Learning:** Have students start to read the articles in the newspaper. **(jigsaw, close read,ConStruct, or reciprocal teaching might work here too)** **Application:** On page 6 students will read and study the diagram and then they will draw another diagram in their notebook that is more similar to their residence

	in our community. **(flow chart map graphic organizer)** **Assessment Part 1** Give students a copy of the last page to fill out **Assessment part 2** Have students then draft a "How to" paragraph that explains how electricity gets to your home. **(WRITE or POWER)** **Debrief:** " What did you learn?" What is electricity and how is it made?" " How does electricity get to your house?" Students will create a concept map of electricity using the content vocabulary **(Graphic organizer or concept map)** **EXPERT VISIT (Craig Tate Holy Cross Energy)** **Final performance assessment. (Service Project)** Students get the week to plan, draft and record their PSA's about safety for the radio. Students will work in groups of 4. **(POWER or WRITE for the script)**

Connections to the Community and the Larger World	
Experts	Craig Tate from Holy Cross Energy will come speak to the kids about electricity and safety
Final Product	Students will make a recorded PSA about electricity safety to share on KSUN community radio station.

Resources
Nasa Why Files: Case of the Electrical Mystery found at: *https://knowitall.org/series/nasa-scifiles* *https://knowitall.org/sites/default/files/electrical_full.pdf* **Colorado Reader: Story Behind the Switch** **Digital copy at** *https://www.growingyourfuture.com/civi/sites/default/files/CO_LR_Energy_Rdr_BehindTheSwitch_2015_LR_Version3.pdf* **Energy: 25 Projects Investigate Why We Need Power and How We Get It. Book by Kathleen M. Reilly** **PHET interactive simulations** https://PHET.colorado.edu