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Energy: Electricity, Heat, and Light

Beth Morrow
Trinity University

Anne Peppers
Trinity University

UNDERSTANDING BY DESIGN

Unit Cover Page

Unit Title: Energy: Electricity, Heat, and Light

Grade Level: Pre-Kindergarten

Subject/Topic Area: Science

Designed By: Beth Morrow and Anne Peppers

Time Frame: 1 week

School District: East Central Independent School District

School: East Central Development Center

School Address and Phone: 12271 Donop Road
San Antonio, TX 78223

(210) 633-3020

Brief Summary of Unit:

This unit is based on the Pre-Kindergarten Science Guideline "Students will investigate and describe sources of energy, including heat, light, and electricity." By the end of the unit, students will know that energy comes in the forms of electricity, heat, and light and be able to identify sources of energy and safely use electricity.

Stage 1 – Desired Results

Established Goals (Texas Pre-Kindergarten Guidelines)

Students will investigate and describe sources of energy, including heat, light, and electricity (Science Domain – VI.A.4)

Transfer

Students will independently use their learning to…

- Identify objects that use or produce energy, in the form of electricity, heat, or light
- Explain the effects of electricity on objects

Meaning

Understandings

Students will understand that…

- Electricity is a form of energy
- Energy is important in our daily lives
- Energy comes in different forms

Essential Questions

1. What is energy?
2. How do we use energy?
3. Why is energy important?
4. How do we use energy safely?

Acquisition

Knowledge

Students will know…

- Energy comes in the forms of electricity, heat, and light

Skills

Students will be able to…

- Identify sources of energy
- Safely use electricity

Stage 2 – Evidence

CODE (M or T)	**Evaluative Criteria** (for rubric)	
T M M	- Identification of objects - Identification of type of energy - Explanation of effect of energy - Explanation of safe use	Performance Task(s) *Students will demonstrate meaning-making and transfer by…* 1. Students will visit an unfamiliar classroom/setting in the school and identify at least two objects that use/produce energy, explain the effect of energy for those objects, and explain how to use them safely 2. Students will choose from assorted images of objects that produce heat or light energy, sort them, then explain their functions --- Other Evidence (e.g., formative): Students will sort given pictures under categories 'Needs electricity' or 'Doesn't need electricity' (Pacing Guide assessment) (see grading guidelines below)

Stage 3 – Learning Plan

CODE (A, M, T)	Pre-Assessment Teacher will pose EQ #1 to students and elicit their responses in journals (including dictation of explanation)	
	Learning Activities	Progress Monitoring (e.g., formative data)
M/A	1. Introduce energy and EQ #1 - pre-assessment (whole-group); read story <u>What is Electricity?</u> and use to introduce concept and associated vocabulary using science word wall (word cards with explanatory illustration) (small group)	
A/M	2. Students will watch "Solar Energy" Discovery Education video clip (first 34 seconds) followed by discussion of what they saw (whole group). Teacher will introduce EQs #2 & #3 and elicit student responses as illustration/dictation in journal. Students will view a PowerPoint presentation showing objects that do and do not use electricity as teacher explains how the objects use electricity; students will each use one slide to identify the electric object, how it uses electricity, and the object's purpose in our daily lives (small group).	Journal response Slide identification
M/A	3. Set up ice tray melting experiment (in classroom and outside building in direct sun, outside building in shade), then have students make prediction (with dictation) of results in journals. Take small groups of students on tour of familiar locations in our building (to include cafeteria, office, library, gym), asking students to identify objects that use and produce different forms of energy in each setting. After tour, check results of melting experiment and ask students to draw results (with dictation); elicit whole class discussion of results and the meaning of results.	Journal entries Journal response Picture sort
A/M	4. Introduce EQ #4 and elicit student responses in their journals; ask students to share their responses with the class. Watch "Socket Safety" Discovery Education video clip, then discuss safety around forms of energy and highlight examples in our daily lives. Present Electrical Safety Poster, post in classroom. Small group: students will sort images of objects that use and do not use electricity and explain. Then, students will be provided with an assortment of images and be asked to choose and sort 5 images based on their production of heat or light energy.	Picture sort (oven, microwave, toaster, space heater, dryer, lightbulb, sun, blow dryer, fluorescent lightbulb, flashlight) Journal entry
M/T	5. Read <u>Oscar and the Bird</u>, then, using science word	Energy identification

		wall, review EQs and ask students to draw themselves using energy in their journals; teacher will take dictation. In small groups, students will visit an unfamiliar setting in the school and be asked to identify and explain the use of two objects that use electricity.	

Rubric for performance task 1:

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Identification of objects	Does not correctly identify any objects	Correctly identifies 1 object	Correctly identifies 2 objects
Identification of type of energy	Does not correctly identify types of energy	Correctly identifies type of energy for 1 object	Correctly identifies types of energy for 2 objects
Explanation of effect of energy	Does not give explanation or gives inaccurate explanation	Partially explains effect of energy on one or both obejcts	Correctly explains effect of energy on both objects
Explanation of safe use	Does not give explanation or gives unsafe explanation of use	Partially explains safe use of one or both objects	Correctly explains safe use of both objects

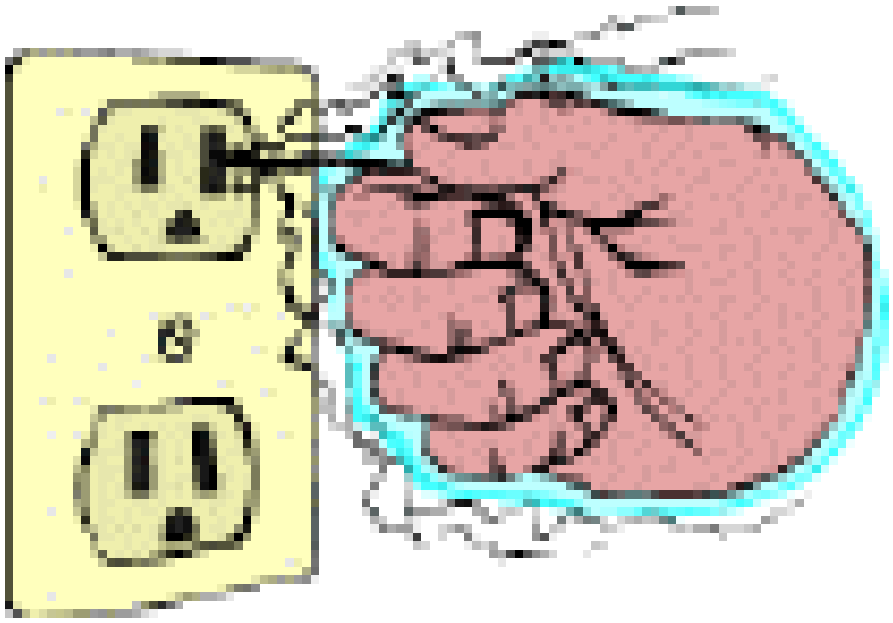
Pacing Guide assessment:

+ Sorts 6 items correctly

√ Sorts 3-5 items correctly

- Sorts 0-2 items correctly

Electrical Safety Poster



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