

# Instructional Recipe

## What Happens When There is No Electricity?

6<sup>th</sup> Grade  
Science & Language Arts



Online research and information resources available through a partnership between the Texas State Library and Archives Commission, the Texas Education Agency and Education Service Center, Region 20  
<http://web.esc20.net/k12databases>

### Step 1 – Ask

**Objectives:** Students will explain how electricity works. They will examine the causes and effects of blackouts. They will understand the impact of the lack of electricity. They will make recommendations on how to survive a blackout in different circumstances and for different lengths of time.

**Introduction:** On November 9, 1965, July 13, 1997 and August 14, 2003 the city of New York experienced lengthy blackouts. While the 1965 and 2003 power outages were blamed on a major failure of the power grid that supplies the city with electricity and were relatively uneventful, the blackout of 1977, caused by lightning, resulted in nearly 2,000 stores and businesses been looted or damaged, and more than 3,500 arrests.



" The Bradley family dine on take-out by the fireplace in Montreal Thursday as they spend their fourth day without electricity." Online Photograph. EBSCO Image Collection. 26 Nov. 2008 <<http://search.ebscohost.com/login.aspx?direct=true&db=imh&AN=imh57698&site=srck5-live>>.

#### Ask:

- What is electricity?
- How is it made?
- How does electricity impact our daily lives?
- How long is a blackout?
- What can cause a blackout?
- Does the time of the day, time of the year or location make a difference?

#### Vocabulary:

- ★ blackout
- ★ brownout
- ★ power outage

#### SCIENCE TEKS:

(9) **Science concepts.** The student knows that obtaining, transforming, and distributing energy affects the environment. The student is expected to: (A) identify energy transformations occurring during the production of energy for human use such as electrical energy to heat energy or heat energy to electrical energy;

#### READING/LANGUAGE ARTS

**TEKS:(23) Research/Gathering Sources.** Students determine, locate, and explore the full range of relevant sources addressing a research question and systematically record the information they gather. Students are expected to:

- (A) follow the research plan to collect data from a range of print and electronic resources (e.g., reference texts, periodicals, web pages, online sources) and data from experts;
- (B) differentiate between primary and secondary sources;
- (C) record data, utilizing available technology (e.g., word processors) in order to see the relationships between ideas, and convert graphic/visual data (e.g., charts, diagrams, timelines) into written notes;
- (D) identify the source of notes (e.g., author, title, page number) and record bibliographic information concerning those sources according to a standard format; and
- (E) differentiate between paraphrasing and plagiarism and identify the importance of citing valid and reliable sources.

#### (24) Research/Synthesizing

**Information.** Students clarify research questions and evaluate and synthesize collected information. Students are expected to:

- (A) refine the major research question, if necessary, guided by the answers to a secondary set of questions; and
- (B) evaluate the relevance and reliability of sources for the research.

**(25) Research/Organizing and Presenting Ideas.** Students organize and present their ideas and information according to the purpose of the research and their audience.

## Step 2 – Investigate

K-12 Databases Resources: Search for blackout AND electricity

- "[electric power](#)." Compton's by Britannica. 2008. Encyclopædia Britannica Online School Edition. 26 Nov. 2008 <http://school.eb.com/comptons/article-9274147>.
- [BLACKOUT 2004](#)? If you were spared last summer's massive power failure, you may not be so lucky next time. By: Kostel, Ken. *Science World*, 11/3/2003, Vol. 60 Issue 4, p4-7, 4p, 1 graph, 1 color; Reading Level (Lexile): 1060; (AN 11177688)
- [Blackout Blues](#). (cover story) *Current Events*, 9/12/2003, Vol. 103 Issue 2, p1, 3p, 1 diagram, 1 color, 1 bw; Reading Level (Lexile): 940; (AN 10765615)

### Search Strategies:

blackout AND electricity AND United States  
"electric power failure"

### Online Game:

[Circuit Construction Kit](#) (Java based) -  
<http://phet.colorado.edu/simulations/>

### Technology Application TEKS:

- 4A** Apply appropriate electronic search strategies in the acquisition of information including keyword and Boolean search strategies
- 5A** Acquire information including text, audio, video, and graphics
- 7A** Use software programs with audio, video, and graphics to enhance learning experiences
- 7B** Use appropriate software to express ideas and solve problems including the use of word processing, graphics, databases, spreadsheets, simulations, and multimedia
- 7C** Use a variety of data types including text, graphics, digital audio, and video
- 10B** Use font attributes, color, white space, and graphics to ensure that products are appropriate for the communication media including multimedia screen displays, Internet documents, and printed materials
- 11A** Publish information in a variety of media including, but not limited to, printed copy, monitor display, Internet documents, and video

## Step 3 – Create

Students will create an idea web or chart to map the causes and consequences of major power outages. Consequences should be divided into categories such as social, economic, political, infrastructure, and others as appropriate.

☞ Technology Link - Students may use Inspiration software or a free Web tool such as Bubbl.us to create their idea web. Students may also use a word processor or spreadsheet to create the cause and consequences chart.

## Step 4 – Discuss

**Students will choose one of the following activities:**

The Department of Homeland Security has asked your class to develop a set of emergency blackout procedures for your community. You should be prepared to explain how you are going to assist various members of the community. Prepare to share these procedures at the upcoming Town Hall meeting.

🔗 Technology Link – Choose one or more of the following activities:

- Create a flyer or an article for the local newspaper using desktop publishing software (i.e., Word, Publisher or Pages).
- Create a Public Service Announcement in video, video podacast or audio podcast format (i.e., iMovie, Windows Movie Maker, Audacity, or GarageBand).
- Create an information website or wiki (i.e., PBwiki, Wikispaces, Google Sites).
- Create a multimedia kiosk to create awareness (i.e., PowerPoint, Keynote).
- Create a billboard (i.e., Photoshop, Fireworks).
- Do an oral presentation for your community members.



## Step 5 – Reflect

Allow students to present their projects to the rest of the class. Use the following suggested rubrics to assess the students' work. Make sure that the students are familiar with the rubric **before** they begin creating their project. They should refer to the rubric repeatedly to monitor their progress in creating their project.

🔗 Technology Link: You can also create your own rubric with your students at <http://rubistar.4teachers.org/index.php>.

## RUBRIC Newspaper Article

CATEGORY	4	3	2	1
Note Taking and Organization	Notes cards are organized in a neat and orderly fashion.	Notes cards are somewhat organized.	Notes cards are somewhat disorganized.	Notes cards are organized only with assistance and reminders.
Quality of Information	Information clearly relates to the main topic. It includes several supporting details and/or examples.	Information clearly relates to the main topic. It provides 1-2 supporting details and/or examples.	Information clearly relates to the main topic. No details and/or examples are given.	Information has little or nothing to do with the main topic.
Use of Language	No grammatical, spelling or punctuation errors.	Almost no grammatical, spelling or punctuation errors	A few grammatical spelling and/or punctuation errors.	Many grammatical, spelling and/or punctuation errors.
Sources	All sources are accurately cited.	All sources are accurately cited, but a few are not in the desired format.	Not all sources are accurately cited.	Few sources are accurately cited.
Attractiveness	Diagrams and illustrations are neat, accurate and add to the reader's understanding of the topic. Article is enhanced by appropriate use of fonts, colors, images, and format.	Diagrams and illustrations are accurate and add to the reader's understanding of the topic. Article is somewhat enhanced by appropriate use of fonts, colors, images, and format.	Diagrams and illustrations are neat and accurate and sometimes add to the reader's understanding of the topic. Article has very little use of fonts, colors, images, and format.	Diagrams and illustrations are not accurate OR do not add to the reader's understanding of the topic. Article lacks appropriate use of fonts, colors, images, and format.

## RUBRIC

### Public Service Announcement

CATEGORY	4	3	2	1
<b>Brainstorming Solutions</b>	Students identify ten or more reasonable, insightful recommendations during a blackout.	Students identify 5 to 9 reasonable, insightful recommendations during a blackout.	Students identify less than 5 reasonable, insightful recommendations during a blackout.	Students' recommendations are not very reasonable or insightful.
<b>Research/ Statistical Data</b>	Students include high-quality data to support their campaign.	Students include good data to support their campaign.	Students include some good data to support their campaign.	Data to support student's campaign is not accurate.
<b>Campaign/Product</b>	Students create an original, accurate and interesting product that adequately addresses the issue.	Students create an accurate product that adequately addresses the issue.	Students create an accurate product but it does not adequately address the issue.	The product is not accurate or does not address the issue.
<b>Sources</b>	Students adequately cite all their sources	Students cite some but not all sources accurately.	Students include sources but are not cited accurately.	Students do not cite sources.
<b>Script</b>	Script is complete and it is clear what each student will say and do.	Script is mostly complete. It is clear what each student will say and do.	Script has a few major flaws. It is not always clear what the students are to say and do.	There is no script. Students invent what they say and do as they go along.
<b>Teamwork</b>	All students contribute to the discussion and all are listened to respectfully. All team members contribute a fair share of the work.	Most students contribute to the discussion and are listened to respectfully. All team members contribute a fair share of the work.	Some students contribute to the discussion and are listened to respectfully. All team members contribute a fair share of the work.	Some team members do not contribute a fair share of the work.

## RUBRIC Webpage or Wiki

CATEGORY	4	3	2	1
<b>Layout</b>	The webpage or wiki has an exceptionally attractive clean and user-friendly layout. It is easy to locate important elements. White space, graphic elements and alignment are used effectively to organize material.	The webpage or wiki has an attractive and user-friendly layout. It is easy to locate important elements.	The webpage or wiki has a usable layout, but may appear busy or boring. It is easy to locate most of the important elements.	The webpage or wiki is cluttered looking or confusing. It is difficult to locate important elements.
<b>Links</b>	All links are active and point to high quality, up-to-date, useful sites.	Links point to quality, useful sites.	Some links are inactive but point to quality, useful sites.	Links are either inactive or point to sites that have not been validated.
<b>Content</b>	The webpage or wiki has a well stated, clear purpose and theme. All information is accurate and relates to the main topic.	The webpage or wiki has a clearly stated purpose and theme, but may have one or two elements that appear not to be related to the main topic.	The purpose and theme of the webpage or wiki is vague.	The webpage or wiki lacks a purpose and theme, or information is unrelated to the topic.
<b>Use of Language (grammar and mechanics)</b>	There are no grammatical mistakes on the webpage or wiki. Rough draft has been edited. Capitalization and punctuation are correct throughout the poster.	There are only minor grammatical errors on the webpage or wiki. Rough draft has been edited. There are very few errors in capitalization or punctuation.	There are some grammatical errors on the webpage or wiki. Rough draft has not been edited. There are some errors in capitalization or punctuation.	There are many grammatical errors on the webpage or wiki. Rough draft has not been edited. There are many more errors in capitalization or punctuation.

## RUBRIC Oral Presentation

CATEGORY	4	3	2	1
<b>Quality</b>	Speaks clearly and distinctly all the time. Uses appropriate vocabulary.	Speaks clearly and distinctly most of the time. Uses vocabulary appropriate for the audience.	Speaks clearly and distinctly about half of the time. Uses vocabulary appropriate for the audience.	Often mumbles or cannot be understood by the audience. Uses several words or phrases that cannot be understood.
<b>Volume</b>	Volume is loud enough to be heard by the audience throughout the presentation.	Volume is loud enough to be heard by the audience at least 85% of the time.	Volume is loud enough to be heard by the audience at least 70% of the time.	Volume often too soft to be heard by the audience.
<b>Posture and Eye Contact</b>	Stands up straight, looks relaxed and confident. Establishes eye contact with everyone in the room during the presentation.	Stands up straight and establishes eye contact with everyone in the room during the presentation.	Stands up straight and establishes eye contact most of the time. Shows some lack of confidence.	Slouches and/or does not look at people during the presentation. Shows lack of confidence.
<b>Topic</b>	Topic is well researched and relevant, accurate information is presented. Stays on topic all the time.	Topic is well researched and most of the information is current and relevant. Stays on topic most of the time.	Topic lacks some research and some of the information presented is not current or relevant. Stays on topic some of the time.	Topic was poorly researched and information presented is not relevant. It was hard to tell what the topic was.
<b>Time-Limit</b>	Duration of the presentation is within time limits.	Duration of the presentation is within a minute of the time limit.	Duration of the presentation is too long or too short by a couple of minutes.	Duration of the presentation is too short or too long by several minutes.
<b>Technology use</b>	Effectively uses technology to illustrate ideas and enhance the presentation.	Effectively uses technology throughout most of the presentation.	Technology could have been used more effectively to enhance the presentation.	Technology is not used during the presentation.