

ELA: Grade 5, Lesson 6, Electrifying Personalities: Introduction

**Lesson Focus:** Basic history of electricity and components of a simple electrical circuit.

**Practice Focus:** Students will write an interview speech to demonstrate their knowledge of the basic history of electricity and the components of a simple electrical circuit.

**Objective:** Students will use *Electrifying Personalities* to understand the history behind and the basic components of electricity with a focus on how the use of electricity has changed lives since its discovery.

**Academic Vocabulary:**

- electricity
- electrons
- circuit
- Electrical Age

**TN Standards:** 5.RI.KID.1 / 5.RI.CS.4

**Teacher Materials:**

- Grade 5, Lesson 6 Teacher Packet
- Chart paper (or regular paper) for teacher graphic organizer
- Marker or highlighter

**Student Materials:**

- 2 pieces of paper
- pen or pencil
- marker or highlighter (if available)

Teacher Do	Students Do
<p><u>Opening</u> (1 min)</p> <p><b>Hello! Welcome to Tennessee’s At Home Learning Series for literacy! Today’s lesson is for all our 5th graders out there, though everyone is welcome to tune in. This lesson is the first in this series.</b></p> <p><b>My name is ____ and I’m a ____ grade teacher in Tennessee schools. I’m so excited to be your teacher for this lesson! Welcome to my virtual classroom!</b></p> <p><b>If you didn’t see our previous lesson, you can find it on <a href="http://www.tn.gov/education">www.tn.gov/education</a>. You can still tune in to today’s lesson if you haven’t seen any of our others.</b></p> <p><b>Today we will be learning about something that has really changed the way we live today! Before we get started, to participate fully in our lesson today, you will need:</b></p> <ul style="list-style-type: none"><li>• 2 pieces of paper</li><li>• something to write with and a flat surface to write on</li><li>• a highlighter or marker if you have one around, if not, your pen or pencil will do just fine.</li></ul>	<p>Students gather materials for the lesson and prepare to engage with the lesson’s content.</p>

<p><b>I'll give you a few moments to get prepared for our time together!</b> [Slight pause].</p> <p><b>Ok, let's begin!</b></p>	
<p><b><u>Intro</u></b> (10 min.)</p> <p><b>Okay, I promise this is NOT a trick question.</b> [Show image: L6-A: lightbulb, radio, phone] <b>What do you think these three things have in common?</b> [Pause]. <b>Well, yes...all of them are considered, by most people, to be common objects. Most people have them around their homes, but what else? Think harder!</b> [Pause]. <b>YES! They all use some form of electricity to work!</b></p> <p><b>Can you imagine life without electricity? Oh my, I surely can't! What would I do without my favorite coffee maker and my morning news show?! It would be so difficult. I wouldn't have my blow dryer, or my phone, or ... well, almost everything I use! I think I've just realized that electricity is something I couldn't live without!</b></p> <p><b>Alright, so I want you to take a moment to think of all the things in your home right now that are plugged into an outlet – everything that is using <i>electricity</i>. Grab a piece of scratch paper and something to write with and start a list. I'll make one at the same time.</b> [Pause and make a list of the things in your home that use electricity]. <b>My list could get very long, how about yours? I'll share what I have so far: I have a few lamps, my TV, my phone charger, my coffee pot, my blow dryer, and even my electric blanket.</b> [Show students your list: <i>lamps, TV, phone charger, coffee pot, blow dryer, electric blanket.</i>]</p> <p><b>Now, take a moment to think of what you have that uses <i>batteries</i> to work. Jot those down below your "plugged in" list. I'll make my list too.</b> [Pause and make a list of the things in your home that use batteries]. <b>Let me share my list of battery-operated stuff: I have batteries in my TV remote, my kids have batteries in their game controllers, and my old alarm clock is still ticking because I make sure to change the batteries when they die. Oh, I also know that my radio, the smoke detectors, my flashlight, and my lava lamp use batteries too. And my car!! Not long ago, the battery in my car died and I couldn't get to work. It was such a hassle!</b></p> <p>Ask students the following:</p>	<p>Students list the things they have in their homes that require electricity: plugged in.</p> <p>Students list the things they have in their homes that require electricity: battery operated.</p>

<ul style="list-style-type: none"> <li>• So, think about it...can you imagine living in a time <u>before</u> electricity? You couldn't make something "work" by just plugging it in or inserting batteries.</li> <li>• What do you think life was like? Was it really different?</li> <li>• How do you think people lived and worked without all the gizmos and gadgets we have today?</li> <li>• What do you already know about electricity?</li> <li>• Do you know anything about the people that discovered how electricity works? What an important discovery, huh?!</li> <li>• Let's dig into our reading to find out what all this talk about <i>electricity</i> really means! As I read, I want you to listen closely to the information that makes you realize how different our lives are from those that lived <u>before</u> electricity.</li> </ul>	<p>Students begin to consider how life today is different than life <i>before</i> electricity.</p>
<p><b><u>Teacher Model/Read-Aloud</u></b> (12 min.)</p> <p>If it's dark and you want to read a book, you switch on a light. If you want to listen to music, you turn on the radio. If you want to talk to a friend, you pick up the telephone and call.</p> <p>If you were living before the late 1800s, however, you couldn't do any of those things! The lightbulb, the radio, and the telephone had not yet been invented. Those inventions – and many more – weren't possible until scientists understood how to use electricity.</p> <ul style="list-style-type: none"> <li>• Even though you might not yet know much about the history of electricity, why do you think scientists wanted to understand it? [Pause]. Well, I think scientists are just regular people, too, and are curious like the rest of us.</li> <li>• I'm curious to know what the text means by "scientists understood how to <i>use</i> electricity." I'm wondering about that word, <i>use</i>? What does it mean to understand how to <i>use</i> electricity? Don't we <i>use</i> it every day? What do you think? [Pause]. Hmmm...maybe, it means that scientists discovered how to put electricity to work...have it "power" things like we have on our lists: radios, phones, and lamps.</li> <li>• I'm thinking I want to know more – let's keep reading!</li> </ul>	<p>Students will learn about the onset of the Electrical Age due to discovery of <i>using</i> electricity to power objects such as lightbulbs, radios, and telephones. Students will learn about the basics of electricity by drawing a model of an electrical circuit and labeling the parts.</p> <p>Throughout, students will be probed to think about how this discovery has changed the way we live today, particularly as it compares to how people lived and worked before.</p>

In simple terms, electricity is a form of energy that exists in nature. Although electricity is all around us, people didn't know how to use it as a source of energy until the late 1800s.

- Okay, I think we have some good information here! We just read that electricity is, what? [pause] Right, a form of energy. I believe I'm going to need a way to start organizing my thoughts. Grab a clean piece of paper and write the word electricity in the middle; now draw a box around it. You can use your marker or highlighter if you want to make it stand out.  
[Model as you begin creating a graphic organizer: *write the word electricity in the middle of your paper*]. Now I want to make sure I remember that electricity is *a form of energy*. I'm going to write it somewhere around the word electricity. [Model as you add to graphic organizer: *form of energy*].
- Did you realize that electricity is in nature? Did you know it is all around us? No way! I really didn't. It's not like we "see" electricity! That makes me want to add that to our chart. [Model as you add to graphic organizer: *all around us, exists in nature*].
- So, before I go on, I think it's pretty cool that we're talking about a time period that's close to 150 years ago, or as the text tells us: the late 1800s. Wow, that is a long time ago! I'm trying to think of what scientists' labs and equipment look like back then. Isn't it interesting that scientists back then discovered they could use electricity as a source of energy, or a way to power things! Cool information. I really think I need to add that to my organizer too. I'm going to add, scientists learned to use electricity in the late 1800s. [Model as you add to graphic organizer: *scientists learned to use in late 1800s*].
- Alright folks, this has me intrigued. Let's keep reading!

In the 1800s, scientists began to learn more about electricity. They learned that electricity is related to tiny particles called electrons. They discovered that in order to use electricity, electrons must flow through a closed loop called a circuit. They also discovered that magnetism is related to electricity and can be used to make electrons flow through a circuit. These early discoveries paved the way for the beginning of the Electrical Age.

- Okay, this section is FULL of vocabulary words that help us understand more about what electricity is

<p>made up of and how it works. So cool! Let's see if we can pull it apart and make more sense of it.</p> <ul style="list-style-type: none"> <li>• The text says that <i>"electricity is related to tiny particles call electrons."</i> Yep, you're thinking what I'm thinking...this belongs on our organizer. [Model as you add to graphic organizer: <i>tiny particles called electrons</i>].</li> <li>• Then, we also just read that in order for us to USE (there's that word...use) electricity, these electrons have to flow through a closed loop called a circuit. Hmm... I think of a "closed loop" looking something like a circle. Can you see all of these tiny particles travelling together in a circle? Pretty cool! I think we should draw it. Let's draw a small circle beside or below the word <i>electrons</i>. [Model drawing the circle beside or below the word electrons]. Now, draw tiny dots travelling along that circle, like this. [Model drawing dots on the line of the circle]. I'm going to label this with the word <i>circuit</i>. You do the same. [Model labeling your drawing with the word circuit].</li> <li>• Alright, I remember something about the word magnetism. The word <i>magnetism</i> must be connected to the word <i>magnet</i>. What does a magnet do? [Pause]. Right, it uses an invisible force to pull or push energy. So, I'm heading back to the text. We read that <i>"magnetism can be used to <u>make</u> the electrons <u>move</u> through a circuit,"</i> so what do you think that might look like? [Pause]. I'm thinking that we can add arrows to represent magnetism forcing electrons to move through a circuit. How about we label them with the word magnetism once and then use the letter M to represent magnetism for the other arrows? Let's do it! [Model drawing arrows around the circle and labeling them with the word magnetism or letter M]. Super job! I know you have a great model of a circuit, full of tiny travelling electrons, all pushed ahead by magnetism. Hold it up and show it off!</li> <li>• And...did anyone catch what this time period is called? [pause] Ah, yes, the <i>Electrical Age</i>. That might not mean much to us now, but spoiler alert, I think it will be really helpful later [wink]. How about we add that to our organizer as well. I'm thinking somewhere near the words <i>late 1800s</i>, let's find it. [Model adding: <i>Electrical Age</i> near the words <i>late 1800s</i>].</li> <li>• I can just see scientists and inventors during this time! They all must have been racing to see what</li> </ul>	
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they could do next. This is such cool stuff! I'm ready to learn more so let's keep reading!

Inventors began to apply some of the new discoveries to their own work. Alexander Graham Bell knew that scientists had succeeded in sending messages electrically over wires as a series of dots and dashes. But the sound of the human voice had not yet been transmitted, or sent using electricity. Bell was determined to be the first to do it – and he was. He invented the telephone, connecting people as never before.

- Again, we're thinking alike...let's add to our organizer. I'm going to add Alexander Graham Bell, or A.G. Bell and the word telephone. [Model adding to your organizer: *A.G. Bell* and *telephone*].

Thomas Alva Edison, who is credited with the invention of many electrical devices, is probably best known for the lightbulb. It is hard to imagine the world without the electric light.

- Yes, let's add Edison to our organizer too! I'm going to write just below A.G. Bell and add Thomas Edison and the word lightbulb. [Model adding to your organizer: *Thomas Edison* and *lightbulb*].
- This is so neat!

Around the turn of the 20<sup>th</sup> century, Guglielmo (gool-YAY-moh) Marconi figured out how to send electric signals without using wires. This remarkable discovery paved the way for the invention of the radio.

- Again, I'm thinking this inventor goes right below Edison on our organizer! I'm going to just write his last name: Marconi, because his first name is really difficult to pronounce ☺. [Model adding to your organizer: *Marconi*].
- But wait a minute, the text didn't tell us that Marconi invented the radio, but that his discovery paved the way for the invention of the radio. I'm thinking we can't add the word radio under Marconi. So, what could we say was his discovery? Let me read it again. "*Marconi figured out how to send electric signals without using wires.*" [Pause]. Well, it sounds like he was able to send electric signals, but without wires. We use a word today that means without wires. What is it? [Pause]. Right, wireless. We say that word all the time! Like: wireless device, wireless connection, wireless hotspot. We even hear it on TV commercials! Let's think about what the text told us,

that Marconi's discovery led to the invention of the radio. What do radios produce? Think! [Pause]. Right, radios produce sound! So, I think we have it...how about we say that Marconi discovered a way to transmit, or send, wireless sound. [Model adding to your organizer: *wireless sound*].

- **Wow! We just learned about three inventors that took electricity to the next level! But, before I move on, I think it would help me to stay really organized if I label this group of important inventors on my organizer. I'm going to make a little header for the group called, yep – you guessed it: *Famous Inventors*. I'm going to head it just like this.** [Model adding the header to your organizer: *Famous Inventors*].
- **I'm wondering...were there other inventors during this time period, the Electrical Age that were working to see what they could do with electricity? I'm thinking I might need to do a little research on my own after today's lesson. What about you? In the meantime, let's read some more to see what else we can learn!**

**Much has changed since the invention of these devices. Scientists and inventors have built upon the early ideas and created thousands of devices that define modern life.**

- **No kidding! So much has changed since these early inventions. Just think about how many lightbulbs are in your own town or city? Hundreds upon hundreds! Remember back to the beginning of our lesson today when you listed all of the things in your home that used electricity or batteries. We had some pretty long lists! Much more than just a single lightbulb.**
- **So, I'm curious to know what you think it means when the text says, "*scientists and inventors have built upon early ideas*"? Use your scratch paper and jot down what you think it means to *build upon the ideas of others*? [Pause]. This is a really interesting concept that I believe impacts everything around us, and I'd like to share with you what I jotted down. I believe *building upon* means that we can use the ideas of people that came before us as a starting place for our new ideas. It's like we know that we don't have to start where they started, that we can use their knowledge and make it even better. Think about the phones we have today. Did they start out the way they look and work today? [Pause]. No way, of course they didn't! Scientists and inventors continued to build upon the knowledge of others and**

<p>kept rolling, on and on, adding improvements along the way. Now we have phones that can fit into our pockets, take really good pictures, and connect us with people using video! Crazy!</p> <ul style="list-style-type: none"> <li>• I think this is so important, which means that it definitely belongs on my organizer. Somewhere under our list of Famous Inventors, let's write <b><i>build upon each other's ideas</i></b>. [Model adding: <i>build upon each other's ideas</i>].</li> <li>• I'm wondering if these three famous men invented anything else? If so, did everything they invent use electricity? Hmmm... Let's get back to our text!</li> </ul> <p>Although the original lightbulb, the first wireless sound transmission, and the early telephone seem "simple" and old-fashioned, they have dramatically changed our world. Just as early electrical pioneers built upon discoveries that came before them, the creators of today's cutting-edge electronic technology build upon the discoveries of Bell, Edison, and Marconi.</p> <ul style="list-style-type: none"> <li>• When I think of the first wireless sound transmission, and the early telephone, they DO seem so simple and a little old-fashioned! Why do you think so? [Pause]. Very true, because what we have today is so much more advanced. Those things seem so old to us, I mean, it was close to 150 years ago, right!</li> </ul>	
<p><b>Guided Practice</b> (5 min.)</p> <p>This was a lot of really cool information to get us going! Now, let's put our brains together to get you ready for your independent practice. So, let's think about it and look back at our organizer for some guidance. Hmmm... we learned that no one even discovered that we could "use" electricity until the late 1800s, and even then, it was what we would consider pretty old-fashioned by today's standards. I also noticed that inventors built upon one another's ideas to make new and even better inventions. Of course, inventors were working hard to do what they thought would make people's lives better.</p> <p>Just think, people at this time in history were used to living and working by the light of candles or gas lamps, sending letters or travelling just to catch up with family and friends. Electricity <u>completely</u> changed their lives! I want you to think about this:</p>	<p>Students will write a short response to the question: How do you think people felt when their lives started to change due to the inventions and advancements in the use of electricity?</p>



<ul style="list-style-type: none"> <li>• How do you think people at this time in history felt as their lives started to change due to the inventions and advancements in the use of electricity? Did they like the changes or not? Did it scare them? Did it make their lives easier?</li> </ul> <p>Jot down your thoughts on your scratch paper [pause].</p>	
<p><b>Independent Work</b> (3 min.)</p> <p>Now, I'd like for us to head back to our organizer one more time to make sure that we have everything we need to do our independent practice. [Pause and begin looking over your organizer and pointing to what you see]. I see that my word, <u>electricity</u>, has a lot of connections: I have information that tells me that electricity is found in nature and is all around us, even though we really can't see it, right? I see that electricity is made up of tiny particles called electrons...and that electrons are part of this great thing called a circuit! I see the time period is the late 1800s and is called the Electrical Age. Of course, we have the names of three famous inventors that found ways to use electricity to make our lives better and, like we thought deeper about earlier during our lesson, these inventors built upon and improved one another's ideas as time went on. But, if I'm honest, I kind of dig my little circuit drawing the best! [☺].</p> <p>After our lesson is over for today, I want you to take some time to complete a really fun activity:</p> <ul style="list-style-type: none"> <li>• I want you to imagine that you are living in the early 1900s and have an interview to work for an inventor. Bell, Edison, and Marconi have already begun their important work with electricity and you have been following their early discoveries, especially what makes up a basic electric circuit.</li> <li>• To prepare for your interview, you create a speech to share with your potential boss in hopes that it convinces him that you know your stuff when it comes to electricity, particularly how it has, and can continue to, change people's lives. Of course, you'll have to mention Bell, Edison, and Marconi to impress him! But don't forget, you don't want to leave without the chance to wow him with your knowledge of the electric circuit!</li> <li>• Use a clean piece of paper to write your amazing, and convincing speech! Reference your graphic organizer for details to support your writing.</li> </ul>	<p>Students will write an interview speech to convince a potential boss about their knowledge of the history of electricity and the basic electric circuit.</p>

<p><b>So again...</b> [Repeat directions another time]. <b>I know you're going to do a fantastic job! Who knows, maybe you'll even get hired!</b></p>	
<p><b>Closing</b> (1 min) I enjoyed learning with you today and am glad we know more about the history of electricity and how much it has changed our lives! Thank you for inviting me into your home. I look forward to seeing you in our next lesson in Tennessee's At Home Learning Series! Bye!</p>	



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