2015-2016

DISCOVERY

Resource Guide

DOKTOR KABOOM!

LIVE WIRE!

THE ELECTRICITY TOUR

Written and performed by

David Epley

DECEMBER 7 & 8, 2015

9:30 & 11:30 A.M. • VICTORIA THEATRE

The Frank M. Tait FOUNDATION Discovery Series

VICTORIA THEATRE ASSOCIATION

www.victoriatheatre.com

Tait FOUNDATION Discovery Series

Welcome to the 2015-2016 Frank M.Tait Foundation Discovery Series at Victoria Theatre Association. We are very excited to be your partner in providing professional arts experiences to you and your students!

Hot off of his residency at the Kennedy Center, we are so excited to have Doktor Kaboom and his new electricity show here in Dayton! There is strong evidence demonstrating that students benefit from turning STEM- (S)cience, (T)echnology, (E)ngineering and (M)ath- into STEAM! By adding (A)rt into this essential mix, students are empowered to break down many of the barriers they put up when it comes to science and math. (A)rt also helps develop creative thinking skills which informs STEM subjects at all levels.

I encourage you to use the grade-specific activities in this resource guide to better prepare you and your students for the wonderful experience of Doktor Kaboom. I encourage you to also send us copies or post videos of the creative work your students accomplish- we love to hear from students and teachers! Our address is listed on the last page. And don't forget to take advantage of the local resources listed inside this resource guide to extend this live theatre experience. Thank you for Discovering Discovery!

Gary Minyard
Vice President of Education & Engagement

Curriculum Connections

You will find these icons listed in the resource guide next to the activities that indicate curricular connections. Teachers and parents are encouraged to adapt all of the activities included in an appropriate way for your students' age and abilities. *LIVE WIRE! THE ELECTRICITY TOUR* fulfills the following Ohio State Education Standards and Benchmarks for grades 2-8:

ARTS

ENGLISH/ LANGUAGE ARTS

SOCIAL STUDIES

SCIENCE

MATH

Ohio Revised Science Standards
Grade 2- Physical Science (Changes in Motion)
Grade 3- Physical Science (Matter and Forms of Energy)
Grade 4- Physical Science (Electricity, Heat, and Matter)
Grade 5- Physical Science (Light, Sound, and Motion)
Grade 6- Physical Science (Matter and Motion)
Grade 7- Physical Science (Conservation of Mass and Energy), Life Science (Cycles of Matter and Flow of Energy)
Grade 8- Physical Science (Forces and Motion)

Ohio Department of Education Drama/ Theatre Standards
Grade 2- 1CE-7CE, 1PR-3PR, 1RE-6RE
Grade 3- 1CE-5CE, 1PR-6PR, 1RE-5RE
Grade 4- 1CE-6CE, 1PR-7PR, 1RE-5RE
Grade 5- 1CE-5CE, 1PR-5PR, 1RE-5RE
Grade 6- 1CE-5CE, 1PR-5PR, 1RE-7RE
Grade 7- 1CE-5CE, 1PR-5PR, 1RE-7RE
Grade 8- 1CE-6CE, 1PR-5PR, 1RE-5RE

National Core Arts Theatre Standards:
Grades 3-8:
CREATING, PERFORMING, RESPONDING, CONNECTING
Anchor Strands 1-11

For more information on the National Core Arts Theatre Standards click here

This resource guide was created by Elaine Stoughton. All activities are available for distribution and use in the classroom or at home.

Table of Contents

About the Show

All GRADES

LIVE WIRE! THE ELECTRICITY TOUR

In this brand new show co-commissioned by the Kennedy Center in Washington D.C., DOKTOR KABOOM explores the fundamentals of electrical energy and the history of humanity's adventures into its potential. At the dawn of the 19th century, mankind first harnessed the power of electricity. The world changed forever, but the journey continues. During this interactive performance, DOKTOR KABOOM will cover topics such as:

- **Safety**
- **Tesla**
- **Edison**
- **Faraday**
- **Lightning Bolts**
- **Current and Voltage**
- **Conductive and non-conductive media**
- **Resistance**
- **Magnetic fields**
- **Electric Generators**
- **Mechanical energy to electrical energy**
- **Electromagnetic coils and conductors**
- **Electrical arcs**
- **Light emission and sparks**

What's his name? It's Doktor Kaboom!

But his real name is David Epley, and he is a comedian who really loves science. When he performs, he plays the role of a scientist from Germany. To show that you agree with Doktor Kaboom, remember to say "Ja!" ("yah"), which is German for "Yes!" David performs improvisational comedy, which means he improvises or changes his jokes depending on what's happening on stage.

Ohio Spotlight

DAYTON INVENTORS RIVER WALK

Science and Inventions go hand in hand! Did you know that Dayton is the birthplace to thousands of inventions? Among them are the backpack parachute, the ice cream cone, the artificial heart, and the yo-yo! Dayton has had more inventions per capita than other city in the United States. This is due to the many corporations that have called Dayton home. At one time, Dayton Engineering Laboratories Company (DELCO), Frigidaire, Mead, National Cash Register (NCR), General Motors, and Reynolds & Reynolds could all be found in Dayton. These companies, along with Wright-Patterson Air Force Base, brought inventive minds to Dayton and provided their employees with the resources to dream big and make their ideas a reality. Today you can visit the **Dayton Inventors River Walk at Riverscape Metro Park** to see monuments and markers along the Great Miami River, paying tribute to Dayton's inventive history. Read more and plan your trip by visiting www.metroparks.org/parks/riverscape/riverwalk.aspx.

COMPREHENSION

Science Vocabulary

SCIENCE

All GRADES

In *LIVE WIRE! THE ELECTRICITY TOUR* Doktor Kaboom uses many scientific terms you might not have heard before.

Atom- the smallest particle of a substance that can exist by itself or be combined with other atoms to form a molecule. An atom is made up of protons, neutrons, and electrons

Proton- a very small particle of matter that is part of the nucleus of an atom and that has a positive electrical charge

Neutron- a very small particle of matter that has no electrical charge and is part of the nucleus of all atoms except hydrogen atoms

Electron- a very small particle of matter that has a negative charge of electricity and travels around the nucleus of an atom

Static Electricity- electricity that collects on the surface of something and does not flow as a current and can cause a mild shock if you touch it

Conductor- a material or object that allows electricity or heat to move through it

Insulator- a material that allows little or no heat, electricity, or sound to go into or out of something

Amps- the number of electrons moving in a circuit (a closed loop)

Voltage- the pressure pushing electrons along an electrical current

Watt- a unit for measuring electric power

Frequency- how fast sound or electromagnetic waves travel

Resistance- how much a conductor slows the passage of current

Magnetic Poles- one of two ends of a magnet where the magnet's force is the strongest

Neodymium- a silver-white to yellow metallic element of the rare-earth group that is used especially in magnets and lasers

Pre-Show Conversation Starters

Use the following conversation starters before you attend *LIVE WIRE!* at the Victoria Theatre.

There is no such thing as scientific fact!

We call gravity a scientific fact, when in reality there is no such thing. We assume gravity will work as we expect it to, simply because it always has. Gravity has worked every day of our lives so far. There is the possibility that some time in the future, it might behave differently. We must remember to always keep an open mind. Sometimes a "scientific fact" is proven wrong by a newer and better discovery. Can you think of a time in your life when a "fact" was disproven? That's how science works!

Applying science to every day life:

We often forget to apply what we know about science to our every day lives. What other ways can you apply your knowledge of science to your life today?

Being right:

When a scientist has an idea, he calls it a "theory." We test theories by conducting experiments. Does it matter in science if we are right or wrong?

Can you think of other scientific "facts" that we take for granted that could be disproven in the future?

Think about your bedroom—where could you apply science to make your bedroom more efficient?

Have you ever been afraid to speak up because you were afraid you might be wrong?

COMPREHENSION

It's A Gas!

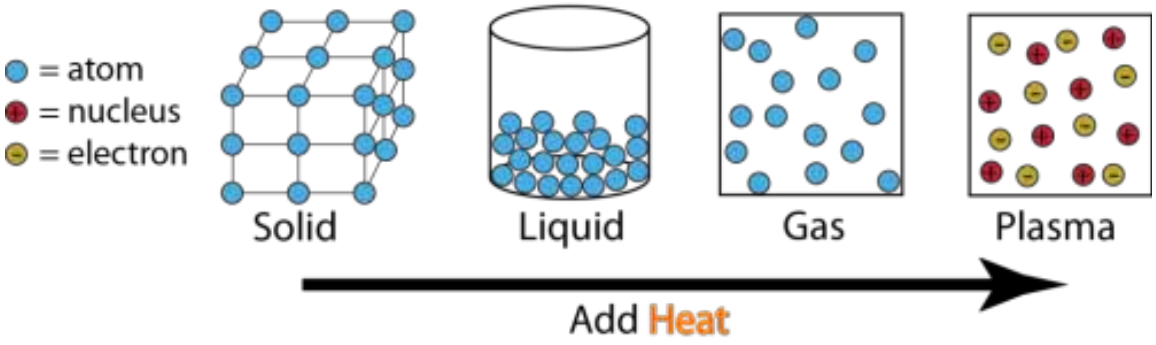
SCIENCE

All GRADES

COMPREHENSION

Substances can have four different states—Solid, Liquid, Gas (think ice, water, steam), and another gas-like state called Plasma that conducts electricity (think lightning!).

States of Matter



Pliers **Melted Snow** **Milk** **Clouds**
Nitrogen **Clock** **Forklift** **Fire**
Steam from hot Chocolate **Juice** **Bleach** **Submarine**
Daffodil **Helium** **Pancake Syrup**

Use the words to the left to create a SOLID, LIQUID, GAS Chart:

SOLID	LIQUID	GAS

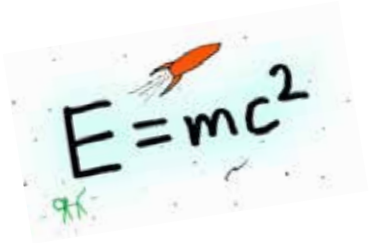
Did You Know?

In *LIVE WIRE! THE ELECTRICITY TOUR* Doktor Kaboom uses a Tesla Coil that creates a flow of electric discharge to make an arc of plasma in the air. Pay attention when this happens. What color is the arc? How do you think this occurs? How is this device useful to scientists?

Know Your Scientists

SCIENCE SOCIAL STUDIES ALL GRADES

The following men and women are Doktor Kaboom's heroes! Keep reading to learn more about the scientists who have helped to shape the world as we know it.



Albert Einstein, *Physicist*

1879-1955. German born, and became a US citizen in 1940.
Won the Nobel Prize for Physics in 1921.
Most famous for developing his Theory of Relativity, a foundation of modern physics.
Also famous for $E=mc^2$

Daniel Bernoulli, *Physicist and Mathematician*

1700-1782. Swiss.
Known for Bernoulli's principle which states that an increase in the velocity of a stream of fluid results in a decrease in pressure
His research would greatly influence the Wright Brothers and their invention of the airplane wing.

Ada Lovelace, *Mathematician and Writer*

1815-1852. English.
Worked on the earliest mechanical general-purpose computer, the Analytical Engine. Her research notes include what is recognized as the first algorithm intended to be carried out by a machine.
She is often regarded as the first computer programmer.

Michael Faraday, *Chemist and Physicist*

1791-1867. English.
Made great contributions to the study of electricity.
Best known for discoveries of electromagnetic induction, diamagnetism, and the laws of electrolysis.
Had very little formal education, but still became one of the greatest scientists in history.

Marie Curie, *Physicist and Chemist*

1876-1934. Polish.
Won the Nobel Prize for Physics in 1903, and again for Chemistry in 1911.
Best known for her studies for radioactivity.
Discovered 2 elements on the periodic chart—Polonium and Radium.

Classroom Activity

Below are five additional scientists who have made important contributions to science. What can you find out about each of them? Have you discovered any similarities? Differences?

Stephen Hawking **Jane Goodall** **Nikola Tesla** **Alan Turing** **Elon Musk**

COMPREHENSION

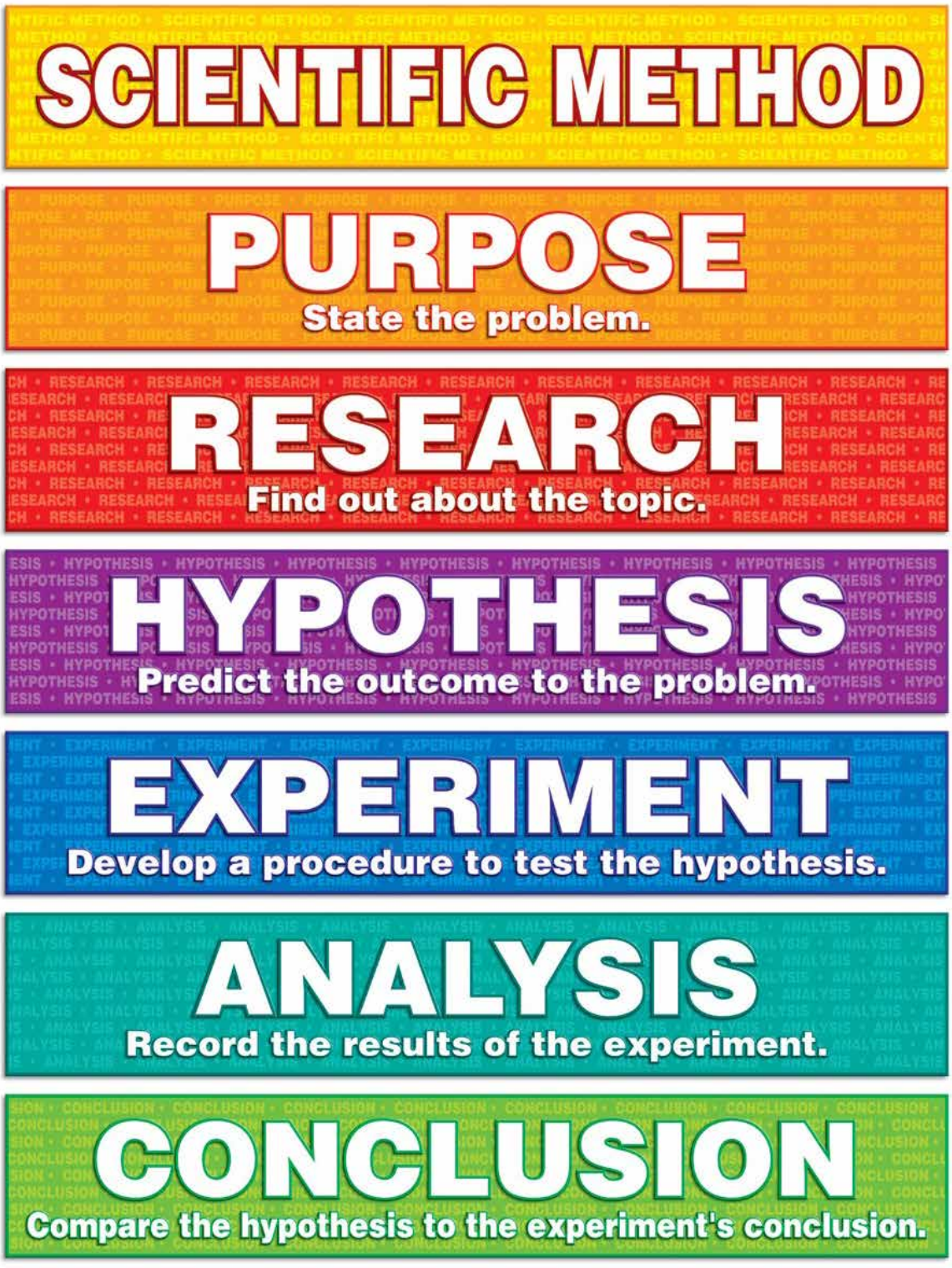
The Scientific Method

SCIENCE

All GRADES

COMPREHENSION

The scientific method is a body of techniques for investigating phenomena, acquiring new knowledge, or correcting and integrating previous knowledge. To be termed scientific, a method of inquiry is commonly based on empirical or measurable evidence subject to specific principles of reasoning. **All scientists use the chart below to take their idea or invention from the conception stage all the way to completion.**



Practice Safe Science!

SCIENCE

All GRADES

On the next four pages you will find science experiments that are Doktor Kaboom approved to be informative and fun! Look for the grade icons in the right hand corner of each page to determine which experiments are best for your classroom. But before you get started, remember to keep it safe!

Practicing Safe Science

As Doktor Kaboom says, "Science can hurt you, especially if I'm the one doing the science." In working with electricity, he has to watch out for sparks, burns, and fires. Even an expert experimenter can face unexpected dangers, so Doktor Kaboom suits up even if there's only the tiniest chance that it'll be necessary—and you should, too. And remember, you should only experiment with electricity with the help of a responsible adult.

Let's look at the gear that Doktor Kaboom wears to protect his body.

Goggles protect his eyes.

Gloves—you guessed it—protect his hands.

Lab coat with long sleeves covers his clothing and skin.

Here are some additional safety tips to consider when completing these experiments at home or in class:

- **Always conduct experiments when an adult is present!**
- **Report all accidents, injuries, and breakage of equipment to an adult immediately.**
- **Keep long hair pulled back and out of the way.**
- **Leave your work station clean and in good order before leaving the laboratory.**
- **Follow all instructions given by your teacher or parent.**

CONNECTION

Electric Flea Circus

SCIENCE

GRADES 2-3

CONNECTION

You are probably familiar with some of the effects of static electricity. Static electricity makes the sparks when you comb your hair on a cold day, and it makes balloons stick to the wall at a birthday party. In this easy experiment, static electricity makes electric "fleas" jump up and down.

You will need:

A sheet of acrylic plastic or other clear plastic- about 12 inches x 12 inches, and 1/4 inch thick

A piece of wool fabric

4 supports about 1 to 2 inches tall- any small can will work (like tuna)

A large piece of white paper- 11 x 17 inches works best

Tiny bits of "stuff"- glitter, grains of rice, puffed rice cereal, spices (dill weed, basil, ground cloves, or nutmeg), or bits of Styrofoam

To Assemble:

Put the piece of paper on the table. Place the supports on the paper beneath the four corners of the plastic, and scatter the tiny bits of Styrofoam, spices, glitter, or rice under the plastic. (You can set this assembly up on any tabletop.)

The Experiment:

Charge the plastic by rubbing it vigorously with the piece of wool cloth or fur.
Watch the "fleas" dance! Try different types of material for charging the plastic, including your hand, and experiment with other materials for fleas. Also, try the plastic at different heights.

What is going on?

Both the plastic and the fleas start out electrically neutral. That is, they have an equal number of positive and negative charges. When you rub the plastic with the wool cloth, the cloth transfers negative charges to the plastic.
These negative charges polarize the fleas, attracting the positive charges to the tops of the fleas and pushing the negative charges to the bottoms of the fleas. The attraction between the negative plastic and the positive charge concentrated on the top of the fleas makes the fleas jump up to the underside of the plastic.

Charge and Carry Experiment

GRADES 4-5

SCIENCE

This experiment will produce a spark that you can feel, see, and hear. Part of this experiment uses an Electrophorus, which is Greek for charge carrier. An even larger charge can be stored up in a device called a Leyden Jar, made from a plastic film can. **You will need:**

For the Electrophorus:

- **A Styrofoam dinner plate**
- **A piece of wool cloth**
- **A disposable aluminum pie pan**
- **A Styrofoam cup**
- **Hot glue gun or masking tape**

For the Leyden jar:

- **A plastic 35 mm film can**
- **A nail slightly longer than the film can**
- **Aluminum foil**
- **Tap water**

To assemble:

Electrophorus:

Tape or hot-glue the Styrofoam cup to the middle of the inside of the pie plate. (Most household glues won't work because they dissolve Styrofoam.) Place the pie pan on top of the upside-down Styrofoam plate or a piece of acrylic plastic.

Leyden Jar:

Push the nail through the center of the lid of the film can. Wrap aluminum foil around the bottom two-thirds of the outside of the film can. You may tape the aluminum foil in place. Fill the film can almost full with water. Snap the lid onto the can. The nail should touch the water.

The experiment:

Rub the Styrofoam plate with the wool cloth. If this is the first time you are using the Styrofoam in an electrostatic experiment, rub it for a full minute.

To charge the pie pan follow the next steps exactly:

1. Place the pie pan on top of the charged Styrofoam plate.
2. Briefly touch the pie pan with your finger. You may hear a snap and feel a shock.
3. Remove the pie pan using only the Styrofoam cup. You may have to hold the Styrofoam plate down with your other hand.

The pan is now charged!

Discharge the pan by touching it with your finger. You will hear a snap, feel a shock, and, if the room is dark, see a spark. To make the largest spark, have the pie plate at least one foot away from the Styrofoam plate After charging the Styrofoam once, you can charge the pie pan several times. The pie pan is portable and can be used for many electrostatic experiments. Charge the Leyden jar by touching the charged pie pan to the nail while holding the Leyden jar by its aluminum foil covering. You can make several charge deliveries by recharging the pan before touching it to the nail. Discharge the jar by touching the aluminum foil with one finger and the nail with another. Watch for a spark.

What is going on?

When you rub the Styrofoam plate with a wool cloth, you charge it negatively. That's because the Styrofoam attracts electrons from the cloth. When you place the pie pan on the Styrofoam, the electrons on the Styrofoam repel the electrons on the pan. Since the electrons can't leave the pie pan because it is completely surrounded by insulating air and Styrofoam, the pan retains its neutral charge. If you touch the pie pan while it is near the Styrofoam, the mobile electrons will be pushed off the pan and onto you.

When you touch a positively charged pie pan to the nail on the Leyden jar, electrons from the nail flow onto the pie pan. The resulting positive charge on the nail attracts electrons from your body through your hand onto the aluminum foil of the jar. The Leyden jar will then have a positive center separated from the negative foil outside by the insulating plastic of the film can. If you touch one finger to the foil and bring another finger near the nail at the center of the Leyden jar, a spark will jump as the negative charges are attracted through you to the positive nail. The beauty of the Leyden jar is that it can store charges from several charged pie pans, thus building up to a larger, more visible, more powerful (and more painful) spark.

CONNECTION

Make Your Own Electroscope

SCIENCE

GRADES 6-8

An **electroscope** is a device used to detect the presence of charge and it's relative amount. The **electroscope** is usually constructed with a metal plate or sphere at the top of a metal post with thin foil leaves hanging from the bottom of the post.

You will need:

- Transparent (see through) glass jar
- Aluminum Foil
- 1 Wire Paper Clip
- Small Piece of Cardboard
- Scissors
- Insulative Tape
- Pencil
- Comb
- Wool (optional)

Step 4: Leaves

Steps:

1. Completely straighten the paperclip and bend one end into a crook.
2. Trace the opening of your glass jar onto the cardboard and cut it out.
3. Poke a small hole in the center of your cardboard circle.
4. Cut two small "leaves" out of the aluminum foil. These should be about as wide as a penny. Then poke a hole in the top of each.
5. Crumble the remaining aluminum foil into a small ball that fits in the palm of your hand.
6. Insert the straight end of the paperclip into the hole in the center of the cardboard. Push it through halfway and use the insulative tape to hole it in place.
7. Stick the unbent end of the paperclip (now sticking straight out of the cardboard) into the aluminum foil ball, and attach the aluminum foil leaves to the bent "u-shaped" end by using the holes you already piked in the tops of them.

8. Use tape to attach the cardboard circle to the top of the glass jar with the aluminum ball sticking straight out the top.

The Experiment:

To generate electricity build up, take the comb and vigorously brush your hair or rub it against a piece of wool. Hold the comb near the aluminum ball and you will see the aluminum leaves move apart!

What is going on?

Electricity is produced when electrons move from one place to another. In an atom there are three parts: protons, neutrons, and electrons. The protons are positive, and the electrons are negative. When two items are rubbed together (like the comb to hair or wool), electrons are transferred from one to another and a negative charge is created. When the negatively charged item is held close to the conductor (the aluminum ball), the charge conducts to the metal. In this experiment the negative charge travels through the paperclip and causes the aluminum leaves to repel each other.

How to make this experiment your own:

Try generating a negative charge using other items. See what happens when you use a balloon. What happens when you make the experiment bigger? Predict what might happen if you use a bigger jar or bigger aluminum ball. Then, test your predictions!

CONNECTION

Bonzo Balloons

SCIENCE

All GRADES

This final experiment is appropriate for all grades are a great way to show off what you learned from seeing *LIVE WIRE! THE ELECTRICITY TOUR* at the Victoria Theatre. Try it at home after the show!

Use balloons to explore static electricity! You will need:

- **A dry, cold day**
- **Two balloons**
- **Two long pieces of string**
- **Wool sweater**

Blow up and tie off one balloon. Press it against the wall. Does it stick?
Now quickly rub the balloon back and forth against your wool sweater. Try sticking the balloon to the wall again. What happens and why? Next, blow up and tie off the second balloon. Tie a piece of string to each balloon. Rub both balloons as you did before. Holding each balloon by the STRING, try bringing them together. What happens and why?

Victoria Fuse's Local Resouce

Only a hop, skip, and a jump from the Victoria Theater, the Boonshoft Museum of Discovery is the premier regional provider of interactive science learning experiences which enrich the lives of children and adults, enhance the quality of life in our community, and promote a broad understanding of the world. The Boonshoft Museum preserves, protects, and enhances its anthropology, geology, paleontology, and biology collections, and even makes these collections available for exhibition, education, and research purposes. Visit *www.boonshoftmuseum.org* or call 937-275-7431.

Boonshoft
Museum of Discovery

CONNECTION

Story and Art Activity: Applying Science to Everyday Life

We often forget to apply what we know about science to our everyday lives. Doktor Kaboom demonstrates this when he discusses the electricity that is all around us and conducts simple experiments to show the power of electricity. What are some other ways we can apply our knowledge of science to our everyday lives?

This activity asks students to make observations about science in their lives, and create a list of personal interactions.

The activity is divided into three parts:

1. **Observing** their everyday life to come up with a list where they engage with science
2. **Creating** a mural timeline chart of their day showing the science they use each day
3. **Sharing** their findings with their peers

Using resources that are appropriate for your students, discuss what it means to interact with science. What kinds of technology do we use everyday? How do we get to school or home? Who were the scientists that made this possible? Who tested their theories? How has the world benefited from their bravery?

Following this discussion, have students create a charted timeline of their day. The students can use words or images from magazines, or draw their own. The timeline should be the big sections of their day, starting when they wake up to when they go to sleep.

When the murals are complete, have each student share their charts and journal about how science and discoveries have made our world a better place.

WHEN I WAKE UP:	**WHEN I GO TO SCHOOL:**
WHEN I GET HOME:	**WHEN I GO TO SLEEP:**

CREATIVITY

Create Your Own Magnetic Slime!

SCIENCE

All GRADES

Doktor Kaboom is pretty sure that most junior scientists have probably played with ooey gooey slime before. But did you know you can make a science lesson out of it? This is a hands-on science activity you have to do to believe.

You will need:

- 8 oz. bottle of school glue
- Borax
- Large mixing bowl
- Plastic cup Measuring cup and utensils
- Ziploc® bag
- Iron filings
- Neodymium magnet
- Water

For the Experiment:

1. Empty the entire bottle of school glue into the large mixing bowl. Add water to the empty glue bottle, tighten the lid, and shake it up. Pour the water and glue solution from the bottle into the bowl. Add some iron filings to the mixture of water and glue before stirring the entire mixture.

2. Measure $^1/_2$ cup of water and pour it into the plastic cup. Add 1 teaspoon of borax to the cup of water and stir the solution. Add the borax solution to the mixture in the bowl. Mix it up VERY well. Hover the neodymium magnet near the slime and witness some ooey, gooey, slime-based magnetism.

What is happening?

What makes this slime magnetic? The iron filings are magnetic! Iron is one of three elements (cobalt, iron, and nickel) that are magnetic at room temperature. The mixture of school glue with borax and water produces a putty-like material called a polymer. In simplest terms, a polymer is a long chain of molecules.

You can use the example of cooking spaghetti to better understand why this polymer behaves in the way it does. When a pile of freshly cooked spaghetti comes out of the hot water and into the bowl, the strands flow like a liquid from the pan to the bowl. This is because the spaghetti strands are slippery and slide over one another. After awhile, the water drains off of the pasta and the strands start to stick together. The spaghetti takes on a rubbery texture. Wait a little while longer for all of the water to evaporate and the pile of spaghetti turns into a solid mass -- drop it on the floor and watch it bounce.

Many natural and synthetic polymers behave in a similar manner. Polymers are made out of long strands of molecules like spaghetti. If the long molecules slide past each other easily, then the substance acts like a liquid because the molecules flow. If the molecules stick together at a few places along the strand, then the substance behaves like a rubbery solid called an elastomer. Borax is the compound that is responsible for hooking the glue's molecules together to form the putty-like material.

Now, what prevents the iron filings from flying out of the slime? The slime is able to hold onto its iron filings by adhesion. Adhesion is the force that holds molecules of different substances together. In addition to adhesion, the slime is bonded together by cohesion, the force that holds molecules of the same substance together. The combination of magnetism, adhesion, and cohesion results in the weird, stretchy volcanoes that appear when you hover the neodymium magnet near the slime!

CREATIVITY

Resources for Students & Adults

Books for Students:

Big Book of Science Experiments: A Step-by-Step Guide, Edited by Time for Kids. Published by Time Magazine: 2001.
The Everything Kids' Science Experiments Book, Written by Tom Robinson. Adams Media: 2001.
101 Science Experiments, Written by Neil Ardley. DK Children: 2014.

Publications for Teachers and Parents:

From STEM to STEAM: Using Brain-Compatible Strategies to Integrate the Arts, Written by David A. Sousa and Tom Pilecki. Corwin: 2013.
Organic Creativity in the Classroom: Teaching to Intuition in Academics and the Arts, Written by Jane Piirto. Prufrock Press: 2013.
Nurturing Creativity in the Classroom, Edited by Ronald A. Beghetto and James C. Kaufman. Cambridge University Press: 2010.
Signs of Change: New Directions in Theatre Education, Written by Joan Lazarus. Intellect Ltd; Revised and Amplified Edition: 2012.
Theatre for Change: Education, Social Action, and Therapy, Written by Robert Landy and David T. Montgomery. Palgrave Macmillan: 2012.
Play: How it Shapes the Brain and Invigorates the Soul, Written by Stuart Brown and Christopher Vaughn. Harvard University Press: 2009.

Websites:

http://www.doktorkaboom.com/: Follow along with all of Doktor Kaboom's adventures, watch videos, and more! For extra content be sure to "Like" Doktor Kaboom! On Facebook, too!
http://gws.ala.org/category/sciences: The American Library Association has compiled the best science websites for kids and made them easy for parents to access. This website links to thousands of websites where children can learn about space, the environment, energy, biology, bugs, and more!
http://www.sciencekids.co.nz/: You can conduct experiments at home just like Doktor Kaboom! With an adults permission and supervision, check out this website for kid-friendly science demonstrations!
https://www.victoriatheatre.com/education-engagement/about-education/;: During the 2014-2015 Season, the Education & Engagement Department at Victoria Theatre Association hosted over 200 events and worked with over 100,000 members of the Dayton community. That's a lot! Stay up-to-date on exciting information like Summer Camps, Free Master Classes, Adult Education Opportunities, Backstage Tours, and more!
http://www.americansforthearts.org/: American's for the Arts is another great website full of esearch and information about the importance of Art in the classroom. Check out their amazing reports, and then use #ArtsTransform to share your personal stories.

For more science adventures check out these museums across Ohio!

National Museum of the USAF in Dayton, Ohio
http://www.nationalmuseum.af.mil/
COSI (Center of Science and Industry) in Columbus, Ohio
http://www.cosi.org/
Cincinnati Museum Center, in Cincinnati, Ohio
http://www.cincymuseum.org/
Cleveland Museum of Natural History in Cleveland, Ohio
https://www.cmnh.org/
Drake Planetarium and Science Center in Norwood, Ohio
http://drakescience.org/index.php?/visit#.VdsfxdKlNtk
Great Lakes Science Center in Cleveland, Ohio
http://www.greatscience.com/
Invent Now: National Inventors Hall of Fame in Akron, Ohio
http://invent.org/
Lake Erie Nature and Science Center in Bay village, Ohio
http://www.lensc.org/

Brought to you by

VICTORIA THEATRE ASSOCIATION

138 North Main Street
Dayton, OH 45402

Tait FOUNDATION Discovery Series

The Education & Engagement programs of Victoria Theatre Association are made possible through the support and commitment of The Frank M. Tait Foundation and the following sponsors and donors whose generosity have opened the door of live theatre to the students of the Miami Valley:

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The Frank M. Tait Foundation

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Doktor Kaboom is the creation of Actor/Comedian David Epley. David has been fortunate enough to discover two passions in his life. Science, his first, took him to study at the North Carolina School of Science and Mathematics.

His second, performing, became his career, and for 20 years David has made his living writing, performing, and directing original interactive comedy across the US and Canada. Follow Doktor Kaboom! on Facebook for fun videos, links, and daily discussions! See you there! Ja? Ja!
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HAPPY 150th BIRTHDAY VICTORIA THEATRE!

Did you know that on January 1, 2016, The Victoria Theatre turns 150! All year long we are celebrating and we need your help! We are collecting stories from patrons about how attending shows at the Victoria Theatre impacted their lives. If you've been inspired by a Discovery Performance over the years, we want to hear it! Please contact Elaine Stoughton at 937-228-7591, ext. 3039 for information on how to share your story!

DON'T FORGET

All schools that receive scholarships for a show and/or transportation are asked and encouraged to create thank-you letters or cards for our sponsors. Please address your students' thank-you notes to:

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