

**ITQ ARTS AND SCIENCE INTEGRATION
GRADE 4
THEATRE AND PHYSICAL SCIENCE**

**Electricity: The Mini Musical
“Conductors and Insulators” Investigation 2, Part 4
LESSON #2**

CONTENT STANDARDS

Theatre

5.2 Use improvisation and dramatization to explore concepts in other content areas.

Physical Science

PS1e Students know electrically charged objects attract or repel each other.

PS1g Students know electrical energy can be converted to heat, light, and motion.

ESSENTIAL QUESTIONS (*Questions students might ask about the topic*)

- What do actors and directors do?
- How do actors and directors use a script?
- What are electrons?
- What is a conductor?
- What is an insulator?
- How does electricity move?

OBJECTIVES & STUDENT OUTCOMES (*Students will be able to.....*)

- Identify what actors and directors do when they first read through a script.
- Connect their science knowledge to a theatrical performance.
- Identify what a conductor and insulator is.
- Explain why electricity moves through a conductor.
- Explain what is electric current.

ASSESSMENT (*Various strategies to evaluate effectiveness of instruction and student learning*)

- **Feedback for Teacher**
 - Student's responses
 - Musical Theatre selection
- **Feedback for Student**
 - Student/Teacher responses
 - Musical Theatre selection

WORDS TO KNOW

Theatre Grade 4

- **Actor:** A person, male or female, who performs a role in a play or an entertainment.
- **Audience:** People who watch, listen and respond to live theatre.
- **Character:** The personality of part an actor recreates.
- **Director:** The person who oversees the entire process of staging a production.
- **Musical theatre** - a type of entertainment containing music, songs, and, usually, dance.
- **Rehearsal:** Practice sessions where actors and technicians prepare for public performance.
- **Run-Through:** A rehearsal moving from start to finish without stopping for corrections.
- **Script** - the written text of a play.

Life Science Grade 4

- **Circuit:** A pathway for the flow of electricity.
- **Closed circuit:** A complete circuit through which electricity flows.

- **Conductor:** A substance through which electricity will flow. Metals are conductors.
- **Current electricity:** A flow of electric charge.
- **Electric current:** A flow of electricity through a conductor.
- **Electron:** A tiny particle with negative charge that goes around the nucleus of an atom.
- **Insulator:** A material that prevents the flow of electricity. Plastic, rubber, glass, and air are insulators.
- **Static electricity:** Positive and negative electric charges that are separated from each other and are not moving.

MATERIALS

- “It’s Electrifying! Musical Script Selection” (included)
- “It’s Electrifying! Musical Script Selection/Teacher Annotated Version” (included)
- CD with music for musical script selection (included)
- CD player
- Science notebooks (1 per student)

RESOURCES

- VAPA Core Learnings: <http://www.sandi.net/204510720114515653/site/default.asp>
- VAPA Grade 3 and 5 Theatre Lessons: <http://tinyurl.com/theatrelessons>
- *FOSS Kit California Edition Grade 4*, “Conductors and Insulators,” Investigations 2, part 4
- *It’s Electrifying!* © 2005 Ron Fink and John Heath, Bad Wolf Press, <http://www.badwolfpress.com> (available at the SDUSD VAPA department)
- *Structuring Drama Work, A Handbook of Available Forms in Theatre and Drama*, Jonothan Neelands and Tony Goode

PREPARATION

- Make enough copies of “It’s Electrifying! Musical Script Selection” for each student in class.
- Actor’s warm-up any time a theatre lesson is being taught.
 - Review with students that **actors** have three tools/instruments to do their work: voice, body and imagination.
 - Each time an **actor** works they must “tune up” their instrument.
 - Arrange students in a circle, each one having personal space.
 - Lead students through a physical warm up isolating different parts of the body and stretching. (rotate hands at wrist, roll shoulders backwards and forwards, rotate head at neck, gently swing hips from side to side, knee bends, rotate foot at ankle, lunges, stretching on tippy toes, hanging like a rag doll, slowly rolling up, shake each limb vigorously 8 times, then 4 times, then 2 times, then once)
 - Lead students through a vocal warm up with yawning, humming up and down the scale, breath exercises expelling air with force from the diaphragm, loud and soft voice, and tongue twisters. (“Whether the weather be cold, or whether the weather be hot, whatever the weather, we’ll weather the weather, whether we like it or not.”)

WARM UP *(Engage students, access prior learning, review, hook or activity to focus the student for learning)*

(10 minutes)

- Direct the students to stand in a circle.
- Explain to the students they are going to use a theatre exercise, which will help develop working as an ensemble, staying focused and learn/review what they learned about electricity.
- Say:
 - *In this exercise you are only allowed to say two words, which are zap and zoom. Now here is how it works. If you turn to your left you need to say zap, then that person turns to their left and says zap and so on. However, as the zap is passed to the left another person can change the direction of the current by turning the right and saying zoom and then the next person turns to their right and says zoom and so on. Think of it as **current electricity** running through a **conductor**. As we do this exercise it is important that only one person speaks at a time and you only say zap or zoom only if someone has said to you zap or zoom. You are only allowed to say zap or zoom but not both.*
- To increase challenge, instruct students to speed it up.
- Tell students to imagine they are **conductors** and the zap and zoom is the **current electricity** passing through them.
- Ask:
 - *When I say you are a conductor, what does that mean? [A substance through which electricity will*

flow.]

- Direct students to return to their seats.

MODELING (Presentation of new material, demonstration of the process, direct instruction)

(25 minutes)

- Say:
 - Today we are going to explore a scene from a **script** that is related to science. A **script** is a tool that **actors, directors** and other theatre professionals use to create a live performance. It is a procedural text. The scene that we will be working with comes from a **musical theatre** script. **Musical theatre** is a type of theatre containing music, songs, and, usually, dance. Has anybody ever seen a **musical theatre** production? Well, we are going to read a **script** and lyrics from the **musical theatre** scene out loud and analyze it the way an **actor** or **director** would. But first we are going to listen to the song in this scene.
- Play for the students the CD with the song from the musical theatre **script**.
- After listening to the song, assign two students to each role in “It’s Electrifying!”
- Project the script on the screen/overhead and the students read through the script out loud while seated. This is called a first read-through.
- After the first read-through, have students describe the **characters**, who they are, how they behave and how they would move to show **character**.
- Explain to the students they are going to do a second read-through however after reading several lines they are going to discuss the science in dialogue.
- Say:
 - When actors and directors read through a script they take the time to discuss the dialogue to make sure they understand the meaning of the text. During this second read through, we are going to stop after a few lines and make sure we understand what is being said.
- Read lines 1-14 then lead the students in a discussion.
- Ask:
 - PSW#3 mentions **electrons** in line one. What are electrons? [A tiny particle with negative charge that goes around the nucleus of an atom.]
 - Describe for me, in science terms, what is happening when PSW#2 says “...the force that made things stick to objects like amber...”? [Negative and positive charges are attracting.]
 - What do you call it when electricity can “really zip through curtain materials? [Electric current]
- Continue to read lines 15-38 then lead the students in a discussion.
- Ask:
 - Remind me again, what is a conductor? [A substance through which electricity will flow.]
 - Can you give me some examples of conductors? [nail, paper clip, wire]
 - What is an insulator? [A material that prevents the flow of electricity. Plastic, rubber, glass, and air are insulators.]
- Continue to read lines 39-52.
- Ask:
 - After reading through those lines can you give some examples of conductors? [something copper, silver, water, iron]
- Continue to read lines 53-60.
- Ask:
 - After reading through those lines can you give some examples of insulators? [leather, ceramic, porcelain, rubber, feathers, hair, glass]
- Finish reading through the script.

GUIDED PRACTICE (Application of knowledge, problem solving, corrective feedback)

(10 minutes)

- Explain to the students that now they have read through the script and discussed the meaning of each line, they are now going to rehearse the scene with the music.
- Tell the students that the lines 1 through 26 are spoken and the rest they will sing.
- Have students run the scene one or two times at their seats.

DEBRIEF & REFLECT (Identify problems encountered, ask and answer questions, discuss solutions and learning that took place. Did students meet outcomes?)

(5 minutes)

- **Ask:**
 - *Now that we have had a **read through** the scene, what do you think our next steps would be?*
 - *How would we go about accomplishing those next steps?*
 - *What did you learn about conductors?*
 - *What did you learn about insulators?*
- Have students respond to the following reflection prompt: How did the scene from “It’s Electrifying! Musical Script Selection” help you to understand electricity?

EXTENSION *(Expectations created by the teacher that encourage students to participate in further research, make connections, and apply understanding and skills previously learned to personal experiences)*

- Have the class rehearse and memorize the full play of “It’s Electrifying” which is available at Bad Wolf Press: <http://www.badwolfpress.com>.
- Have the class rehearse and memorize the scene so they can perform for another class.
- Allow students to create costumes for the play from recycled materials.
- Encourage students to take ideas from other subject areas and write their own scripts