

Study Guide for Teachers

Caryn Lin Back to Rock: The Science of Sound

Presented by
Young Audiences
New Jersey & Eastern Pennsylvania
(866) 500-9265
www.vanied.org



ABOUT THE PROGRAM

In an amazing multi-media interactive extravaganza, Caryn Lin transforms sound itself through the use of her 5 string electric violin and a myriad of modern technologies that take the students from the classical days of Bach to today's techno-wonders. By using modern techniques, including looping and other effects to produce unique and dynamic soundscapes, audiences are introduced to the many scientific concepts involved in the creation of live music. Through the use of technology, three dimensional sound waves become visible, bringing music to life before the audience's very eyes and ears! Caryn opens up students' minds to the fact that they can explore, in whatever discipline they study, "out of the box thinking." This program draws from the schools' curriculum in music, science & history.

LEARNING GOALS

Students will:

- Develop an awareness of the diversity of musical sounds in an environment.
- Understand how science and art can interact to create something new
- Learn the scientific concepts and art involved in the creation of live music.
- Journey through the history of music from Bach to Techno
- Be exposed to the technology of sound looping and sound effects

BACKGROUND INFORMATION FOR STUDENTS

An Electric Violin is a violin equipped with an electronic output of its sound. The term most properly refers to an instrument intentionally made to be electrified with built-in pickups, usually with a solid body. It can also refer to a violin fitted with an electric pickup of some type, although "amplified violin" or "electro-acoustic violin" are more accurate in that case.

Benjamin Franklin

On June 10, 1752, Benjamin Franklin flew a kite in a storm and captured an electrical charge in a Leyden jar after lightning struck his kite. But this wasn't the first time Franklin had dabbled with electricity; for more than a decade prior the scientist managed to survive "self-inflicted" shock treatments. And how did he do that? Many say through sheer luck: Franklin apparently never incurred a strong enough charge to put him six feet under, but he reportedly knocked himself out a few times. Franklin's experimentation with electricity was so groundbreaking, there wasn't even terminology for what he was discovering. He made up words when there weren't words to describe the nature of his work. Terms like "conductor," "battery," and "positively and negatively charged" were all thanks to Ben Franklin.

<http://www.biography.com/people/benjamin-franklin-9301234>

Johann Sebastian Bach

Born on March 31, 1685 (N.S.), in Eisenach, Thuringia, Germany, Johann Sebastian Bach had a prestigious musical lineage and took on various organist positions during the early 18th century, creating famous compositions like "Tocatta and Fugue in D minor." Some of his best-known compositions are the "Mass in B Minor," the "Brandenburg Concertos" and "The Well-Tempered Clavier." Bach died in Leipzig, Germany, on July 28, 1750. Today, he is considered one of the greatest Western composers of all time.

<http://www.biography.com/people/johann-sebastian-bach-9194289#synopsis>

BEFORE THE PROGRAM

OPTION ONE

Lead the class in a discussion around the following topics:

- How is being in an audience different from being at a baseball game? Different from being in a classroom? (Discuss appropriate audience conduct and consider writing a Top Five List for Audience Conduct.)
- What do you think of when you hear that we are going to have a violin assembly? (Write predictions on Post Its and place on the board.)
- How does it make you feel listening to rock music vs. classical music? Which do you prefer and why?
- What things in your house use electricity? Make a list on the board.
- Do we need to be careful when we use it?
- Do we leave things on if we are not using them?
- Are science and music related? Turn to a partner and share.

Then watch the performer Caryn Lin
<https://www.youtube.com/watch?v=Rmjyjr0mKs>.

OPTION TWO

Have students list questions they have about the assembly they are about to see based on all that they have discussed and seen in the video. Post those questions and tell students to see if they can find the answers while at the assembly.

AFTER THE PROGRAM

OPTION ONE

Return to the Predictions from above. Ask students, "Were we accurate in what we thought we would see? Why or why not?"

OPTION TWO

Return to the questions posted. Choose an option:

- Have students each select one and write an answer based on what they learned. Share and post.
- Have a whole class discussion about the ones that can be answered.
- Have students pair up, select a question, answer it and present it to the class.

OPTION THREE

Have the class generate a list of things they learned about Science and a list of things they learned about Music.

OPTION FOUR

Ask students to revisit the question, "Are science and music related?" with a partner. Ask the whole class if their ideas changed.

VOCABULARY WORDS

Sound	Pitch
Electricity	Volume
Technology	Music
Science	Eardrum
Energy	Nerves
Vibration	Frequency
Oscilloscope	

ARTIST INFORMATION

Caryn Lin is a classically-trained violinist who became an electric violinist and education innovator. There is no previously-defined category for her unique genre. She thinks of her music as new age/world/classical-ish. The New Jersey native started violin lessons at age 9, and studied with the Philadelphia Orchestra's Larry Grika. She earned a violin performance degree from Northwestern University and then moved to Germany to study under virtuoso Suzanne Lautenbacher. Caryn plays her electric violins, using looping to create short, on-the-spot recordings of her violin, voice, and percussion instruments. The layers of sound over deceptively simple melodies are otherworldly and totally catchy. Performance venues include the Kimmel Center for the Performing Arts, the Lincoln Center for the Performing Arts, Six Flags, the Crayola Crayon Factory, a monastery in the French Alps, and thousands of schools. Her music has been featured on MTV's "The Real World," and on 150 international radio stations including satellite. She appeared performing in the movie Philadelphia. Caryn is currently recording her sixth studio album.

RESOURCES

VIDEO

Live Performance of Caryn's piece, "The Call" from The Community College of Baltimore County
<https://www.youtube.com/watch?v=Rmjyjr0mKs>

Watch a "Cool Brain Video" How playing an instrument benefits your brain. TED
www.youtube.com/watch?v=R0JKCYZ8hng

Watch video of a cool violin concerto Bach wrote for 2 violins. Bach Double Violin Concerto:
<https://www.youtube.com/watch?v=leTVfMb2uME>

Watch video of the WAWA pedal played by one of the best guitar players ever!
<https://www.youtube.com/watch?v=s1OGQQk5HpM>

BOOKS

Cool Science, Experiments with Sound and Hearing by Chris Woodford
Fascinating Science Projects SOUND by Bobbi Searle

WEBSITE

Website for exploring the SCIENCE OF MUSIC
<http://exploratorium.edu/music/>