

Original Radio Program

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Create an engaging experience in which students will learn about early radio production and gain an understanding of how much the advancement of radio technology changed entertainment and how people consumed it.

- Create a scripted dialogue
- Record sound effects to use
- Answer Student worksheet questions

Age Levels: 11-18

Time: 1 hour

[Inquiry Unit/Lesson Plan, Activity PDF](#)

Materials & Preparation

Build Materials (For each team)

Required Materials

Depending on how you wish to complete this activity, you can either have the students attempt to create their sound effects on their own, using materials they can find, or provide them with materials commonly used to create sound effects. If you choose the latter, the list below provides some examples of materials as well as the sound they can be used to create.

- 1 pair of dress shoes
Simulate footsteps using your hands to “walk” on a desk or floor
- A roll of cellophane
Crinkle to simulate the sound of a fire
- A metal pan and a bag of rice
Slowly drop the rice onto the metal pan to simulate the rainfall on a roof
- A piece of aluminum sheet metal or a thin metal baking sheet
Shake quickly back and forth to simulate the sound of thunder
- 2 hollowed-out coconut shells
Clap together to create the horse hooves on a road
- A textbook or similar hardcover book
Tap softly on the cover to simulate the sound of a heartbeat
- A recording device. (Both Apple and Android phones should have a built--in voice--recording app or voice memo app. Or, you could use an old tape recorder, which would also show students another type of recording device.)

You can use many other materials to create sounds, but this should give you and your students a good starting point. If you would like to explore the subject further, more information can be found [here](#) and [here](#). If your school has a music or AV department, consult with their staff for further information.

Real World Applications

Radio plays, also called radio drama or audio plays, are a form of entertainment that rose to prominence in the 1930s and '40s. They were a major revolution in pre-television entertainment and allowed people to experience live theatrical performances starring popular actors in their own homes for the first time. The setup of the traditional radio play broadcast involved several actors statically positioned around either one or two microphones who performed the script, often playing multiple characters. In addition to the cast, sound effects or “foley” artists would be stationed around the studio using various props to add sound effects and ambient noise to the production in order to increase the realism of the scene.

I will add the history of radio part one and two here (can't add in google docs)

I believe the best way to put these in would be imbed the videos with the short description of each before the videos to separate them and make them look less in your face as it would be if it was just video after video.

Join historian Alex Magoun on a journey through the history of radio technology from James Clark Maxwell's theory of electromagnetism to Guglielmo Marconi's use of that theory in long-distance radio transmissions, which began the wireless communication industry.

insert history of radio part one

Continue on the historical journey of the radio industry with historian Alex Magoun as he goes back in time and shares how engineers and scientists improved wireless telegraphy from Morse code to the beginnings of commercial radio broadcasting.

insert history of radio part two

<https://reach.ieee.org/?s=radio> **(None that really fit here in this unit)**

Engineering Design Challenge

Design Challenge

Create an original radio program using the same techniques utilized in early radio studio productions.

Criteria & Constraints

- You will need to write and perform a scripted dialogue that includes at least 5 sounds that must be created artificially in your “studio.”
- Practice recording each of the sound effects until you achieve the effect you want.

Activity Instructions & Procedures

Listen to the following 1937 broadcast of The Lone Ranger. Programs like this one were a regular staple of the early days of commercial radio. The story in this particular episode takes place outdoors, but the entire show was produced and performed inside a small studio and all the sounds were created artificially. Watch the following video recording of Guy Noir (note the sound effects at 4:55), a radio drama performed in the style of the 1930s programs. Pay attention to the sound effects artist on the left side of the stage and watch how he creates various sounds using everyday items. Finally, take a look at an actual script from Sherlock Holmes and note how the dialogue and sound effects are intermingled so that each effect is perfectly timed to make the show seem more realistic.

1. After watching and listening to the radio play, The Lone Ranger, and video, Guy Noir (note the sound effects at 4:55), found in the preceding links, split the students into groups of 4 or 5. (https://archive.org/details/The_Lone_Ranger_page1, <https://youtu.be/UBdcQmZ9TBc>)

(We need the proper video for the guy noir, unfortunately the video link here is a private video so they need to send it to us.)

1. If you choose to use the provided materials, present those to the class and show them what sounds they can make with them. If not, tell the students ahead of time about the assignment to give them time to think about what sound effects they like and collect the materials necessary to make them.
2. Once that is complete, have them begin writing the script for their radio play within their groups using the handouts. For an example of a radio play script click the following link for a Sherlock Holmes radio play from 1939.
3. Once they've finished writing, have them create the 5 sound effects they need for their play.
4. Once they've achieved the effects, have them record the sounds on a phone or other recording device so they can be played back during their performance.
5. Have the students present their plays in the traditional radio play style (similar to Guy Noir) with one student in each group assigned to play the sound effects.
6. After all of the performances are complete, have the students answer the following questions:
 - Has this exercise changed the way you think about television, radio, and movies?
 - Do you think that today's TV and movies are influenced by these radio plays? If so, how?
 - Do you think the providing sound effects along with the dialogue helped make the radio plays more engaging than if they had just been dialogue?

- What developments in the field of radio and broadcasting do you think helped lead to the success of radio plays during the 1930s and '40s?

Student Reflection (engineering notebook)

1. How do you turn equations into a technology?
2. To what extent did David Sarnoff affect the course of broadcast history
3. How did changes in broadcast technology affect the use of radio or tv in the early 20th century?
4. How did radio or television broadcasting change countries or communities politically, economically, or socially?

Time Modification

The lesson can be done in as little as 1 class period for older students. However, to help students from feeling rushed and to ensure student success (especially for younger students), split the lesson into two periods giving students more time to brainstorm, test ideas and finalize their design. Conduct the testing and debrief in the next class period.

Engineering Design Process



Divide into teams

Review the challenge and criteria constraints

Brainstorm possible solutions (sketch while you brainstorm!)

Choose best solution and build a prototype

Test then redesign until solution is optimized

Reflect as a team and debrief as a class

Dig Deeper

Ref. Inquiry Unit???

<https://reach.ieee.org/inquiry-units/radio/>

Listen in as radio expert Al Klase of the New Jersey Antique Radio Club explains the effects radio had on society and culture in the 1920s and watch as he demonstrates and tunes in a station on an authentic restored 1920's radio.

1920's Frequency "Tune-In" and In-Home Entertainment

This video explores the beginnings of broadcast radio in the home, thanks to Pittsburgh's KDKA radio station and Westinghouse, which made radio receivers. The electromagnetic "magic" found in smartphones of today can be traced back to the same "magic" used in early radios. Al Klase of the New Jersey Antique Radio Club explores these similarities as he turns on and tunes in a Westinghouse radio.

Commercialization of Broadcast radio in the home

Like game consoles and smartphones today, radios in the 1920s were expensive. Fortunately for teens back then, they could build radio receivers using cheap parts found at home and hardware stores. Watch and listen to radio expert Al Klase of the New Jersey Antique Radio Club as he delves into the history and operation of crystal radio sets.

Crystal Radio

"While developing programs to help America emerge from the Great Depression, Roosevelt also needed to calm the fears and restore the confidence of Americans and to gain their support for the programs of the New Deal, including the NRA. One of the ways FDR chose to accomplish this was through the radio, the most direct means of access to the American people. During the 1930s almost every home had a radio, and families typically spent several hours a day gathered together, listening to their favorite programs. Roosevelt called his radio talks about issues of public concern "Fireside Chats." Informal and relaxed, the talks made Americans feel as if President Roosevelt was talking directly to them. Roosevelt continued to use fireside chats throughout his presidency to address the fears and concerns of the American people as well as to inform them of the positions and actions taken by the U.S. government."

AUDIO <http://reach.ieee.org/wp-content/uploads/2017/06/afdr014.mp3>

http://reach.ieee.org/wp-content/uploads/2017/06/IEEE_REACH_President-Roosevelt%E2%80%99s-Fireside-chat-1.pdf

Recommended Reading

Electric Waves, Being Researches on the Propagation of Electric Action with Finite Velocity Through Space, by Dr. Heinrich Hertz, 1857-1894. The English translation of Hertz's collected researches on electromagnetic waves, with a preface and introduction that puts his work in historical perspective reaching back to Isaac Newton.

[https://babel.hathitrust.org/cgi/pt?id=uc1.\\$b104628&view=1up&seq=1](https://babel.hathitrust.org/cgi/pt?id=uc1.$b104628&view=1up&seq=1)

"It was 150 years ago that the English scientist Michael Faraday discovered that he could generate electricity with magnets – the phenomenon we call electromagnetic induction. In the same year that Faraday made this discovery, there was born in Scotland the man whose brilliant mathematical interpretation of Faraday's ideas was to become the foundation of our modern concepts of electricity, magnetism and light, James Clerk Maxwell. This exhibit celebrates the life and work of these two men and seeks to highlight their contributions to our understanding of electricity and our ability to make electricity work for us through engineering."

<http://ethw.org/w/images/c/ce/LinesandWaves.pdf>

Radio enters the home

http://reach.ieee.org/wp-content/uploads/2017/06/IEEE_REACH_Radio-Enters-the-Home.pdf

IEEE Biography of Guglielmo Marconi

"Marconi was born in Italy in 1874 to Giuseppe and Annie Jameson Marconi. His father was a prosperous Italian landowner and his mother was from a wealthy Irish family of whiskey distillers. Because Marconi applied himself only in the subjects that he was fascinated by—physics and chemistry—he dropped out of several schools and was largely educated by private tutors in at the family's residences in Livorno and Bologna, Italy. In 1894, after reading articles about electromagnetic, or radio, waves, and Heinrich Hertz's death, he began thinking about building a device to transmit long and short bursts of radio waves over long distances. He understood that this method of communication would be faster than telegraphy and less cumbersome because no wires would be involved."

http://reach.ieee.org/wp-content/uploads/2017/06/Guglielmo-Marconi-Engineering-and-Technology-History-Wiki_2.pdf

IEEE Biography of David Sarnoff

“Sarnoff was born on 27 February 1891, the oldest of five children, outside Minsk in imperial Russia. He and his family immigrated to the United States in 1900 and settled on the Lower East Side of Manhattan. Sarnoff’s first job was as a newsboy; the existence of so much information so cheaply available was a revelation. At fifteen, his grade schooling finished, to support his family he found a job as a messenger boy for the Commercial Cable Company. When his boss refused him time off for Rosh Hashanah, he joined the Marconi Wireless Telegraph Company of America as an office boy and then a telegrapher.”

http://reach.ieee.org/wp-content/uploads/2017/06/IEEE_REACH_David-Sarnoff_2.pdf

In 1909, Guglielmo Marconi was awarded the Nobel Prize for his contribution to the development of wireless telegraphy. Here you will find a link to the lecture, which includes Marconi’s explanation of how he turned Hertzian waves into a wireless communications technology, in competition with cable telegraphy and uniquely for ship-to-shore and ship-to-ship communications.

http://reach.ieee.org/wp-content/uploads/2017/06/IEEE_REACH_Wireless_Telegraphic_Communications.pdf

Writing Activity

Related Engineering Fields and Degrees

There are many different types of engineering fields that involve designing products and processes. Here are just some of the related engineering fields.



Environmental Engineering



Industrial Engineering



Electrical Engineering



Computer Engineering

Download the Engineering Fields Infographic: How will YOU change the world?

Student Worksheets

Once you are finished with the presentations, answer the following questions about early radio and its influence:

1. Has this exercise changed the way you think about television, radio, and movies?
2. Do you think that today's TV and movies are influenced by these radio plays? If so, how?
3. Do you think the providing sound effects along with the dialogue helped make the radio plays more engaging than if they had just been dialogue?
4. What developments in the field of radio and broadcasting do you think helped lead to the success of radio plays during the 1930s and '40s?

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