Building your Own Crystal Radio Lab

Name:_____Per:___

Crystal Radio	
Objective:	Students will be able to construct and evaluate how components of a crystal radio relate to the communication system that transmits information using radio waves to carry a signal by creating a crystal radio.
Materials: What additional materials do you think you will need to construct a crystal radio? Add them to the list on the right. Will you bring anything from your house to add to your crystal radio? If so, add an asterisk.*	• Aluminum Foil • Hook Wire • Copper Wire • Germanium Diode • Alligator Clips • Piezoelectric earphone/Speaker • • • • •
Sketch/Diagram: You can use the internet to find examples of how to build a crystal radio. It can be through videos or websites. Provide a digital sketch (go to insert and click on drawing to create a sketch) of how your team decided to design and construct your crystal radio. You can also insert a hand-drawn image by taking a picture and uploading it to the doc. Add in the procedures or how you plan to build your crystal radio. (Link	

the website you used)	

Research Time

You will now have a period to research how a radio works using electromagnetic radiation. Your job as a team is to use the resources provided and to find additional resources to explain how AM and FM signals work. You will present your findings by choosing to create either a Canva flier, poster, video or Google slides presentation.

Research Questions: Guided Questions to answer.

Below are a few websites you can use. (all pages checked on 2/2/23)

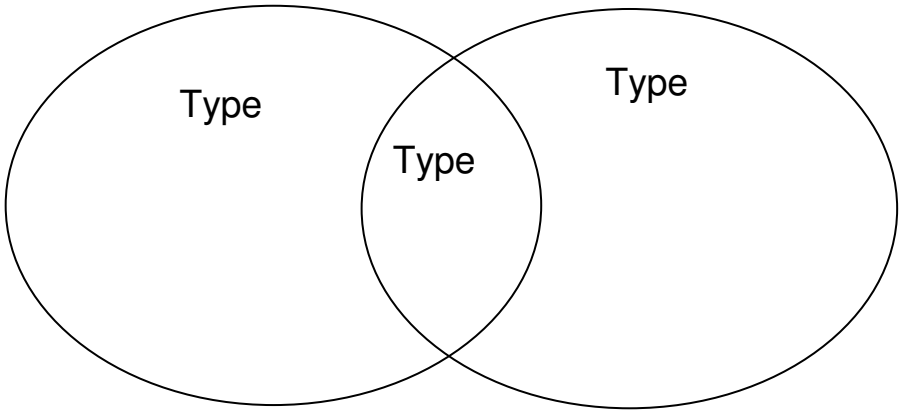
1. https://www.explainthatstuff.com/radio.html
2. https://www.lifewire.com/how-fm-radio-works-3135076
3. https://illumin.usc.edu/catch-a-wave-radio-waves-and-how-they-work/

If you use other resources don't forget to include the websites in a work cited page in your final product.

1. **What are radio waves? How do you make radio waves?**
2. **What is a radio?**
3. **What are modulations?**
4. **What does AM and FM stand for? Does AM or FM have better sound quality? What are the differences between them?**
5. **What is an antenna and how is it used in a radio?**
6. **How do radios turn AM and FM signals back into sound?**
7. **Is there a difference between analog and digital radio?**

	8. **Why don't radio waves get all mixed up?**
Video Time	
Video: Watch the YouTube video. Write down at least 5 main ideas about how radios work. *Might be assigned as homework depending on time.	How do Radios Work? (https://www.youtube.com/watch?v=drLxfjqZHVo) •
Optional Video: Watch the YouTube video. Write down at least 5 main ideas about how radios work.	Radio Wave (https://www.youtube.com/watch?v=sRX2EY5Ubto •
Simulation Time	
Explore Time: **Take a few minutes to explore the different simulations to see how radio wave communication works.**	Electromagnetic Wave Simulation **(https://javalab.org/en/category/electricity_en/electromagntic_wave_en/)** Type in any notes you want to add •
Compile your research into either a Canva flier, poster, or Google Slides presentation	
Additional Notes	What did your team decide to create to showcase your research? • Add any additional notes. •
Conclusion	
Reflection Time: Answer the questions to the right.	1. **Explain how a radio works in your own words. Don't forget to mention the transmitter and the antenna.**

2. **Use the Venn diagram below to compare and contrast AM and FM radio signals.**



3. **How do you make radio waves?**

4. **How important is the radio in your life? Can they be used in an emergency?**

5. **Were you and your team satisfied with how your crystal radio worked? Why or why not? If you had the chance to do this again what would you do differently?**