



The World As We Know It (🌍 A Cognitive Health Story)
(4th Grade – 9-10 yrs.)
Experiment: Do You Hear What I Hear?



STORY CONNECTION – SLIDES 9-10 (Approx Time: 10-15 mins)

We can hear things – waves of electromagnetic energy – we hear some things – other animals hear other things. But animals hear different things based on the hair cell receptors they have in their ears. When it comes to hearing, people and chickens hear about the same. Humans and chickens hear electromagnetic energy between 20 and 20,000 Hz. (A hertz is a cycle of air movement – wave – per second.) But when it comes to hearing – dogs rule!!! They hear sounds between 40 and 60,000 Hz. So yes, dogs rule when it comes to hearing and people and chickens drool.

Materials needed:

- Animal Hearing Facts Website: <https://www.hear.com/useful-knowledge/animal-hearing-abilities/>
- Hearing Experiment Data Collection Sheet (included below) or paper
- Hearing Test Website: https://www.youtube.com/watch?v=0Vpl_2DTQhY (2:39)
- Equipment to play online hearing test
- Pencils

Preparation needed:

- Print Hearing Experiment Data Collection Sheet (1 per student)
 - There are two data sheets per form below (print double sided).
- Familiarize yourself with the hearing test video

Instructions:

1. In this activity, student(s) will learn some fascinating facts about the hearing ability of animals and then test their own hearing.
2. Begin by asking the student(s) if the following statements are true or false. HINT: They are all true! The link above will give a more in-depth explanation of the facts below.
 - Elephants can physically hear when rain clouds are gathering, so they know when to head for water sources.
 - Bats famously use something called “echolocation” to locate their prey and get around the nocturnal world.
 - Dolphins create powerful sonic pulses from their foreheads similar to echolocation used by bats.
 - Cats’ ears are designed to funnel high frequency sounds from 40-50 meters away and this is also why experts think that exposing them to amplified music can be damaging.
 - Dogs have more sensitive ears than humans but are not as sensitive to high frequencies as cats.

3. In the next part of the activity, student(s) will conduct a hearing test on themselves. Explain to student(s) that they will...
 - listen to a tone for eight seconds
 - record if they are able to hear the tone with both ears, with their left ear only, and/or their right ear only.
 - use a check mark or an X, yes or no, plus or minus, etc. (Have them choose what will be quick and easy for them to record.)
4. Go over the Hearing Experiment Data Collection Sheet prior to starting the video.
5. Play the video.

NOTE: The video might need to be shown twice for student(s) to get all their data recorded.
6. Once the video is over student(s) have collected their data, discuss the results. Use a show of hands to ask who could hear the tone at each hertz level.
7. Show the chart below and note the animals that can hear at each level.
8. In closing, review that hearing is one of the senses that animals use to be able to know about the world around them to stay safe. Staying safe is good for both their body and their brain. Different animals can hear differently to stay safe and survive in their environments.

Hearing Experiment Data Collection Sheet

Name:		Date:	
Tone in hertz	Both Ears	Left Ear	Right Ear
500 HZ			
1000 HZ			
2000 HZ			
3000 HZ			
4000 HZ			
4500 HZ			
5000 HZ			
5500 HZ			
6000 HZ			
6500 HZ			
7000 HZ			
7500 HZ			
8000 HZ			
8500 HZ			
9000 HZ			
9500 HZ			
10,000 HZ			

Hearing Experiment Data Collection Sheet

Name:		Date:	
Tone in hertz	Both Ears	Left Ear	Right Ear
500 HZ			
1000 HZ			
2000 HZ			
3000 HZ			
4000 HZ			
4500 HZ			
5000 HZ			
5500 HZ			
6000 HZ			
6500 HZ			
7000 HZ			
7500 HZ			
8000 HZ			
8500 HZ			
9000 HZ			
9500 HZ			
10,000 HZ			

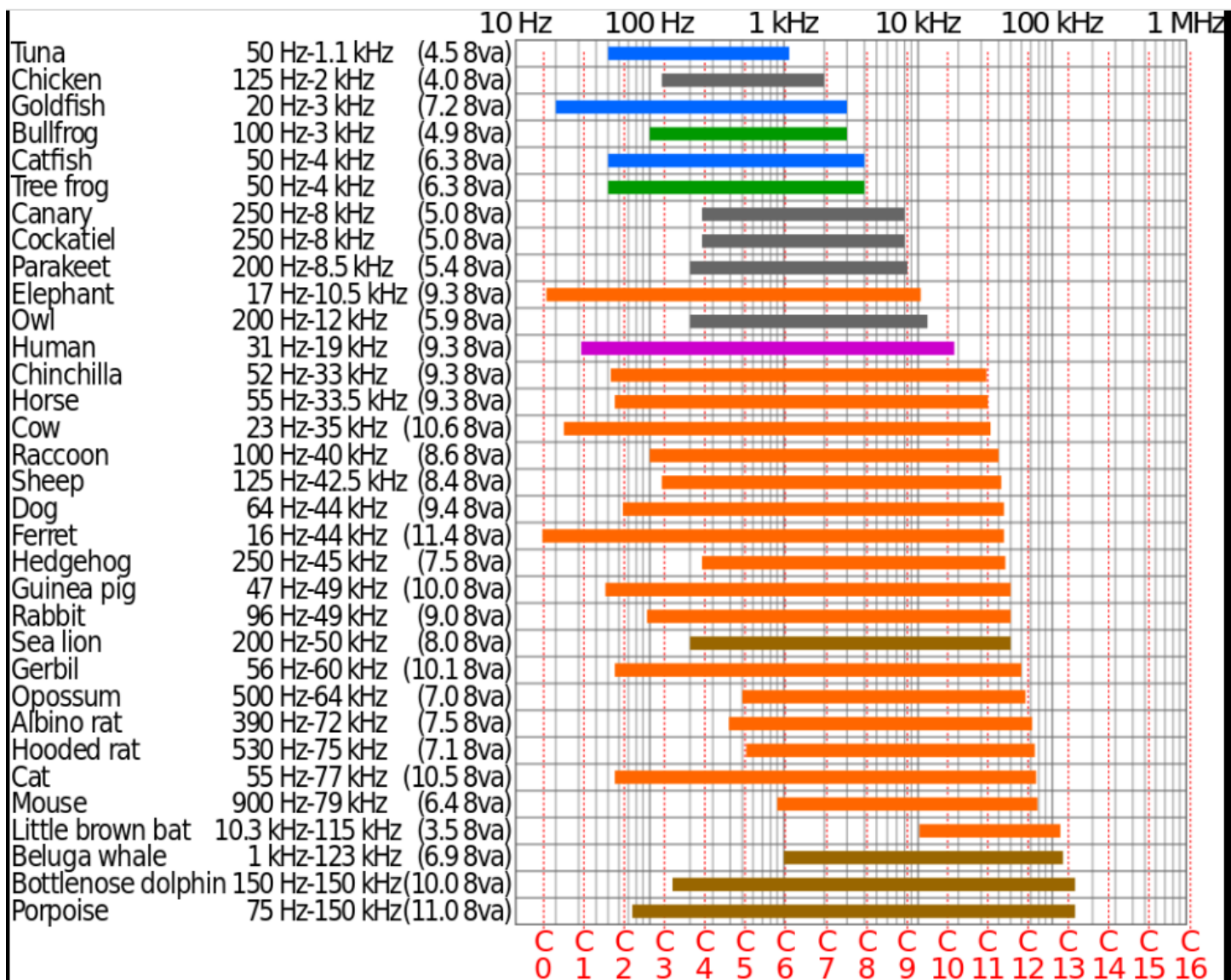


Chart Credit: https://en.wikipedia.org/wiki/Hearing_range#/media/File:Animal_hearing_frequency_range.svg