



WORLD WAR II - *Radar Detection System*

LESSON PLAN

Objectives:

This lesson plan is designed to correspond with a life science classroom studying plant and animal adaptation. After completing this lesson, students will be able to:

- understand the origin of modern radar and sonar stemming from biological systems.
- describe how radar works.
- Restate how bat, dolphin or whale use echolocation.

Course / Grade Level:

Life Science (6th/7th Grade)

Pre-Activity:

- Discuss various specialized adaptations of plants and animals. Several examples will be given in class such as Venus Fly Trap, opposable thumbs, etc.

Activity Procedure:

1. Discuss several examples of animal adaptations, include the dolphin, bat or whale echolocation.
2. Explain and discuss how waves are sent out and collected by the organisms. Briefly identify the anatomical structures that the various animals use to emit as well as collect these waves.

3. Play a recording of whale songs or dolphin calls for the students. Explain that these calls allow communications between animals as well as allow animals to locate their food source. (You may want to ask students if they have ever thrown rocks up while bats are flying around. What was the result of this? If students have tried this, they should have noticed that some bats will follow the rock as it falls toward the earth. This is a great example of how an animal uses waves to find and follow potential food.)
4. Ask students: what technical application would echolocation be similar to? Students should come up with radar and/or sonar. Briefly go through sonar/radar structures that produce and collect the waves.
5. Allow students time to play with the *Radar Detection System* activity in the *Time Engineers* game. Make copies of the *Recording Sheet* (found at the end of the lesson plans) for the students. Have them add the following headings:

**H-SWEEP, V-CONE,
STRENGTH, PLANES
DESTROYED, STATIONS
REMAINING**

As the students do the activity, have them keep track of each trial using the recording sheet.



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Discussion / Questions:

- What were the results of your mission? What settings worked for you to keep Britain safe? Discuss their results.
- Would an animal such as a bat want to have a wide (90-180 degrees) “radar” sweep or not? Explain.
- Would the bat want a high or low output (would they want their food searching signal to scan far or close?). Explain.
- What are some similarities and differences between animal echolocation and radar? Compare the structures of both emitting devices as well as the receiving devices in animals and the radar.

Extension:

- Research other types of modern technology that is based on animal adaptations.

