

TRACK THE BLIP

INTRODUCTION

Students use Track the Blip to start developing their ideas about how waves can be used to find out about the world around us. When students have completed the activity, you can explain to them about the use of sonar; then you can explain how radar uses a different kind of wave, but works in a similar way.

MATERIALS

- + Shoe box and wooden skewer
- + Templates
- + Legos™ or blocks to be submarines inside the box

Affix the grid template to the top of the box, and the other template to the skewer. Tape or glue the “submarines” to the bottom of the inside of the box.

STANDARDS

NGSS 4 PS4-1

Develop a model of waves to describe patterns in terms of amplitude and wavelength, and that waves can cause objects to move.

NGSS 4 PS4-3

Generate and compare multiple solutions that use patterns to transfer information.

NGSS MS PS4-2

Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.

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Students need to develop a conceptual model of waves that becomes more quantitative as they reach middle school. This activity lays the basis for that mental model. It uses physical models to explain how waves work to reveal objects by reflection. It supports the Science and Engineering Practices of Developing and Using Models, Analyzing and Interpreting Data, and Constructing Explanations. In this activity students will have the opportunity to experience the Crosscutting Concepts of Patterns.

NAME:

DATE:

TRACK THE BLIP

One of the big challenges for the Allies, especially early in the war, was locating German submarines that were sinking supply and passenger ships. Sonar was used to find them. Sonar uses sound waves and their reflections to identify objects.

The box your teacher has given you has one or more hidden submarines in it. You will use a model of sonar to find those submarines.

**Use the sonar beam (the stick) to explore the ocean (the box).
Figure out a search strategy to find the submarines.
Should you check every hole first?
Should you spread out your search?**



Control room of a US Navy submarine.
(*The National WWII Museum, 2010.130.083*)

**Record your results on the paper your teacher gives you then answer these questions:
How does sonar work? How is radar different from sonar?**



SONAR BEAM



SONAR BEAM



SONAR BEAM



SONAR BEAM



SONAR BEAM



SONAR BEAM



SONAR BEAM



SONAR BEAM

NAME:

DATE:

TRACK THE BLIP



SOUND NAVIGATION AND RANGING | SEEING WITH UNDERWATER EYES

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