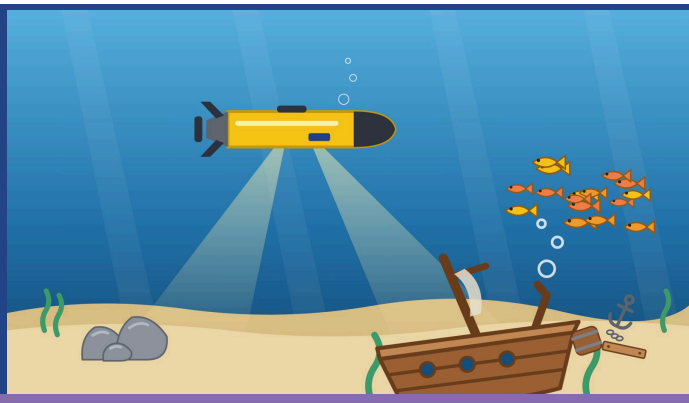
Ages 6-8

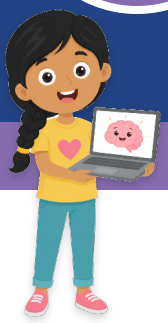
Tracking a Shipwreck

Training an AI Underwater Robot



THE BIG QUESTION

Can you teach a robot to find a shipwreck?



Unplugged, Navy-relevant, an Hour of AI lesson

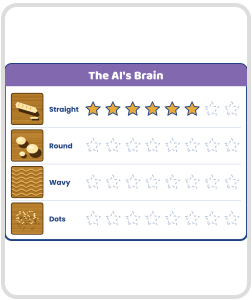
TIME	GROUPING	SUBJECTS	TECHNOLOGY
60 min + 15-min extension	Teams of 3-4	AI, data, ocean science	None: fully unplugged

Lesson Overview

Students become a Navy AUV team. On a 4 × 4 map of face-down tiles the robot sees only sonar pictures. A paper AI picks the square with the most stars, and students reward it with stars when it finds debris or the wreck. The map is reshuffled every mission, so the AI must learn a pattern. Students graph the battery used, run a Final Test on a new map, and discuss when people should check an AI.

How the Lesson Runs

1. **Brief:** Meet the AUV, what AI is, and how sonar finds wrecks.
2. **Predict:** Guess which sonar picture shows a shipwreck.
3. **Train:** Three missions: choose, peek, reward; Score Sheet after each.
4. **Test:** A new map with no new stars: what did the AI learn?
5. **Reflect:** Graph the data, the Whale Bones Surprise, design an ocean AI.



The AI's Brain after training: Straight sonar pictures earned the most stars.

The Navy Connection

The Navy's Naval History and Heritage Command manages more than 3,000 Navy shipwrecks, and AUVs with side-scan sonar help search large areas. The REMUS 6000 AUV, designed with the Office of Naval Research and the Naval Oceanographic Office, found the San José in 2015. The Navy is now funding AI that recognizes objects in sonar pictures.

Fun fact: Sea life can fool sonar AI, just like the whale bones fool the paper AI in this game.

Student Objectives

- Describe how an AI learns from experience: try, get a reward, change
- Graph mission data and tell whether the AI improved
- Test the AI on a new map and decide when to check its choices

CSTA 2026 Standards

E1-ALG-ML-02	AI systems use patterns in data to make decisions
E2-ALG-ML-02	How data is used to train a machine learning model
E3-ALG-ML-02	How a model changes when new data is added
E1-DAT-DC-08	Collect numeric and non-numeric data

Materials

Game Kit: free 8-page PDF per team: ocean map, 16 fold-over tiles, AI's Brain, arrow cards, AUV, star tokens

Make once: color printer, cardstock, scissors or a paper cutter, envelopes

Workbook: 1 per team (the Recorder writes in it), plus page 4 for each student; pencils, crayons

Key Vocabulary

AI – a computer that can learn and make choices

AUV – an underwater robot that drives itself

Sonar – sends out sound and listens for echoes

Reward – a signal that says "that worked!"

STEM Careers

Sonar Technician · Robotics Engineer · Data Scientist · Naval Historian