Seaperch Environmental Explorer – Sensing the Underwater World Time

Sandalwood Highschool

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Objective

Students will equip their Seaperch ROV with basic environmental sensors to measure and record underwater environmental conditions during exploration missions.
This project aims to introduce students to marine environmental monitoring through robotics in an accessible and achievable way.

Engineering Design Process

How can we use Seaperch to measure underwater environmental conditions?
- Imagine: Brainstorm safe and effective ways to mount sensors on the ROV.
- Plan: Select sensors, design waterproof mounting solutions, and plan exploration missions.
- Create: Install sensors on the Seaperch, assemble a simple data recording system, and perform initial tests.
- Improve: Adjust sensor placements.

Conclusion

Through this project, students will demonstrate the ability to adapt Seaperch for scientific missions, learn basic data logging and analysis, and experience real-world environmental science applications.

Results and Discussion

Students will produce simple graphs (e.g., temperature vs. depth, turbidity vs. distance) and discuss:
- How environmental conditions vary underwater
- How technology can support marine research
- Challenges encountered with underwater data collection
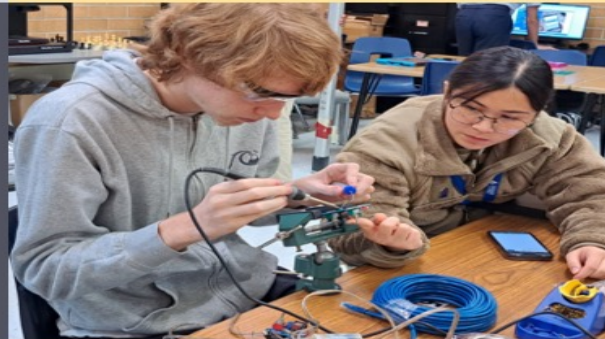
Innovation Description

Students will attach waterproof sensors (temperature, turbidity, and/or light sensors) directly to the Seaperch ROV. The sensors will be connected to a basic data logger or live feed system. While navigating their ROVs, students will record environmental measurements and observe how conditions change based on location, depth, and environmental factors.

Next Steps

- Add additional sensors (e.g., dissolved oxygen, salinity)
- Improve data logging (wireless transmission)
- Expand to different types of water bodies (e.g., saltwater vs. freshwater testing)
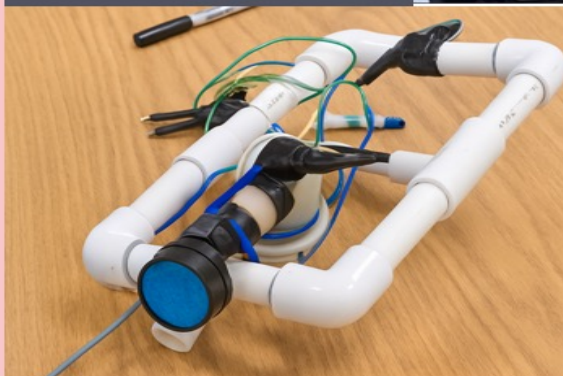
Methodology

1. Choose 1-2 simple sensors (e.g., waterproof temperature probe, turbidity sensor).
2. Secure sensors onto the Seaperch frame using zip ties and waterproof enclosures.
3. Connect sensors to a data logger or live wire connection to a laptop/tablet.
4. Pilot the Seaperch in different zones (e.g., sunny vs. shaded areas, different depths).
5. Record sensor data during exploration missions.
6. Analyze and compare data after the mission.