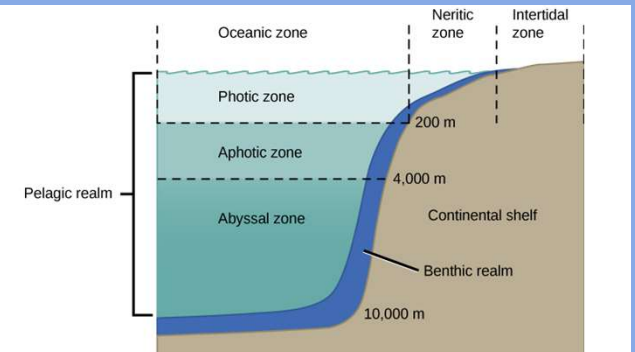


Educational Calming Tank

By: Zoe Neely (Project Manager), Hannah Milner (3D printing specialist), Mariah Fassett (Technology Expert), Aliyah Tuttle (Auditory and Sensory researcher), and Alexis Harding (Lead designer)

Universal Design Principles

- **Equitable Use** : This tank is designed to accommodate all users, including, but not limited to individuals with physical and intellectual disabilities, individuals who are hard of hearing, and individuals who are blind or visually impaired.
- **Flexibility in Use**: The LED lights in the tank can be changed to the user's preference. The music/sounds can also be controlled by the user.
- **Simple and Intuitive Use**: The tank is easy to use, as it requires no excess knowledge, and it has little to no complexity.
- **Perceptible Information**: On the tank, we have labels of the different layers of the ocean in both English lettering and Braille.
- **Tolerance for Error**: We are using non-toxic fluids that will be contained in the tank, which will have a lid so the liquid cannot be accessed.
- **Low Physical Effort**: The Educational Calming Tank does not require any physical effort unless it is being moved or transported. It is simply a static mechanism.
- **Size and Space for Approach and Use**: The small 1.2-gallon tank size makes it an appropriate size for most spaces and approaches.



<https://www.nursinghero.com/study-guides/os-conceptsofbio/aquatic-and-marine-biomes>

Engineering Process

Problem

School can be a stressful environment for some students. Our team wanted to create something to help relieve that stress, as well as turn it into an educational device. This would also help kids that rely on visual learning.

Brainstorming

Our vision and final decision was based around a fish tank that would have calming aspects, as well as a representation of the three layers of the ocean (Photic, Aphotic, and Abyssal).

Planning

To represent the three layers of the ocean, we decided to use liquids of three different densities. Based on each layer, we would have the appropriate sea life. We also wanted to include LED lights, a sound system, and Braille.

Experimenting

We started to test various liquids together, and eventually we decided on Mr. Clean cleaning solution, Dawn dish soap, and Karo corn syrup. We also tested different 3D print filament densities as well.

Design Improvement

Our giant squid and boat kept floating upwards, so we incorporated metal into each to hold them down. Our dolphin kept sinking from the top layer, so we lowered the density.

Acknowledgments

- Mrs. Scoble's class – life skills
- Mr. Hug- CAD
- Mr. Neely- Advisor
 - Mr. Townsly- Machining
- Tunkhannock Area High School

Prototype Video



References and Links

• [Layers of the Ocean](#)

• [Ocean Creatures and Calming Effects](#)

• [Ocean Zones](#)

• [Budget](#)

*See QR code for access to links

Extra Information

