GaiaXus
Beyond awareness

Aloha Kakahiaka!

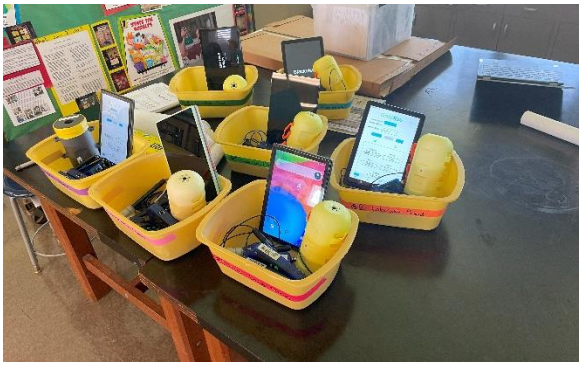
Community-based STEM with Hilo Intermediate School

In Hawaiian folklore, water, known as "Wai," is revered as a life-giving force intertwined with creation and spirituality. It plays a central role in myths, symbolizing vitality and serving as a conduit for communication and spiritual communion. From the gods emerging from primordial waters to deities like Kanaloa and Hina, water shapes cultural practices, beliefs, and identity, embodying ancestral wisdom and fostering reverence in Hawaiian society.

We at GaiaXus recently had the honor of collaborating with students and teachers at Hilo Intermediate School as they explored how the topography of the Big Island impacts the streams crucial to their community's livelihood and recreation. The students focused on identifying factors influencing sediment and salinity levels at river-ocean confluences.

Engaging with a familiar river while applying modern STEM practices, students embarked on a dynamic learning journey blending STEM principles with contextual, community-based experiences. Led by STEM educator Mr. Silva, the collaborative nature of the project fostered teamwork among student groups, a feature he found particularly beneficial.

Students worked in groups to test the water's turbidity and salinity using the GaiaXus device. They explored the river, discussing the cause of the variation they discovered. The students reported that the Honoli'i River had the highest turbidity whereas the Wailoa Pond had the greatest salinity (Table 1). By experiencing a field lab contextual to their environment, they were able to see how natural and anthropogenic factors might influence the water quality of the streams they have grown up with.



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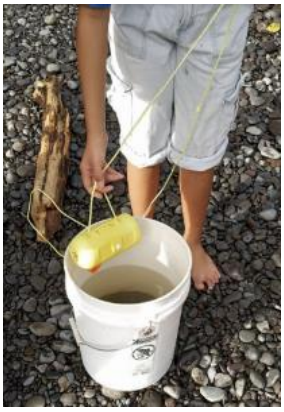
Dubbed "Yellow Submarine" by the students, the GaiaXus system swiftly became ingrained in their understanding,

effortlessly grasping its function, form factor, and overall operation. Designed specifically to eschew the appearance of a typical analytical system, it aimed to lower the entry threshold for students who may not typically gravitate towards STEM subjects. This inclusive collaboration empowered otherwise reserved students to take charge within their groups, signaling a notable increase in self-confidence and motivation.

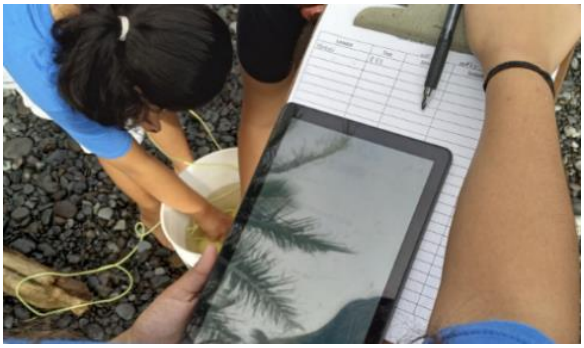


Though they had addressed their initial experimental question, the students continued working with the system and the data. The next phase prompted students organizing and analyzing their data in preparation for a science fair. Here, students took on the role of educators, teaching younger students about water quality variances on the Big Island and demonstrating the device's usage in interactive activities. These interactions not only bolstered the students' confidence but also forged stronger community ties around the shared mission of safeguarding local water resources.

Table 1: Water Sample Turbidity (NTU) and Salinity (ppm) Readings from 3 Different Locations

	Sample 1: Wailoa Pond	Sample 2: Honoli'i River	Sample 3: Control (L-BUILDING)
Turbidity (NTU)	80 NTU	384 NTU	41 NTU
Salinity (ppm)	6,200 PPM	88 PPM	56 ppm
Observations	Murky, brown and grassy	Rocks & light brown water	Clear and opaque

In summary, the students not only answered a pressing research question but also actively engaged with their local community. However, their quest did not conclude here. Dr. Pinner emphasized that these students, while connected to their land, often felt disconnected from conservation efforts. GaiaXus aims to bridge this gap by empowering students with sensors, fostering confidence, and encouraging exploration to cultivate a deeper understanding of and connection to their environment.



Contact us

Contact us to find out if our systems can help you with your monitoring projects or in your classroom.

See you by the creek!

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