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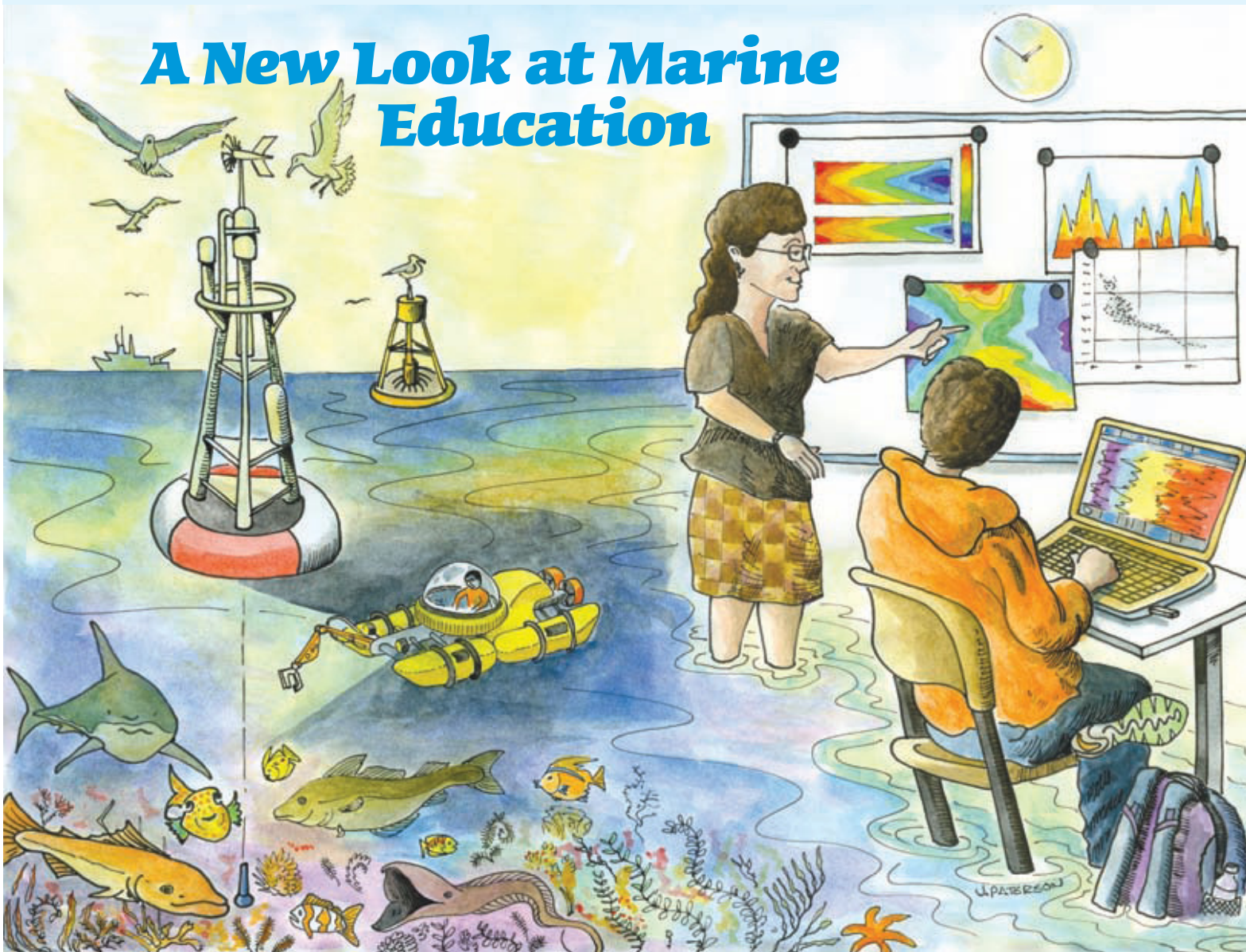
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A New Look at Marine Education



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Healthy Bodies Lead to Healthy Oceans
Ocean Monitoring Devices Transform Learning
Seaquaria in Schools

Build Your Own Watershed
Folklore and Ocean Literacy
A Closer Look at Plastics in the World's Oceans

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Facilitators of Fascination

Fostering a love of the ocean no matter where you live

by **Tara R. Short**

COOL WATER RUSHES OVER OUR FEET and laps at the deck as the boat rocks and the stern is momentarily submerged. Sparkles of gold dance on the green sea and the red escarpments of sand stone and black volcanic rock that formed the cove in which we are moored.

“Put your toes to the end of the platform,” I instruct my student, a teen from Wisconsin. She inches forward with trepidation, sliding her rubber fins across the raised grooves on the boat deck as we bobble in the Sea of Cortez in Baja California, Mexico. She is about to take a *giant stride* into the wild ocean for the first time.

“It’s OK for your fins to hang off of the edge,” I assure her, trying not to shout as I compensate for the loud chaos of chatting teens, screeching pelicans and the clapping waves around us.

“Keep your snorkel in your mouth, hold on to your mask with one hand and your weight belt with the other. As you jump, don’t forget to look at the horizon,” I say, pointing toward the mountain range in the distance.

This student’s movements are slow and thought out. I can sense her brain thinking the steps through as she slowly moves her hands and feet. With that stiff, thick wetsuit, foggy mask, and salty snorkel she must feel like an astronaut stepping onto the moon, about to plunge into liquid space and the unknown.

Bouncing on the back of the boat, melting in the desert sun, I wait for her confidence to grow. The air temperature is more than 100 degrees F (38C). The cool water is very inviting. Sea salt is drying to my skin.

“Are you ready?” My words sound positive and encouraging, in a no-pressure, ‘we can stay here all day’ tone. She nods her head and says a muffled “yes” which sounds like “tess” as it echoes through the barrel of her snorkel.

“One, two, three, jump!” I pause between numbers and exclaim with the word jump as I give her a gentle but firm push to ensure she clears the platform.

Like a mother bird, watching her fledgling take its first flight, I am there to witness her first interaction with the sea. She seems to hold mid-air in slow motion as her momentum brings her closer to the surface. For a moment, I wonder if



she remembered to hold her breath. Her bright yellow fins stretch out like a dancer. She's only a foot above the water but seems to hover in mid air for eternity until swallowed by the foamy froth with an imploding splash replaced by swirling whirlpools of brine. As quickly as she disappeared, she emerges like a playful sea lion pup smiling through bright alert eyes.

Marine science is as much sensory as it is academic. Submerged below the surface, in a crystal blue alien world, your brain processes information about the sea in ways you cannot learn in books or see on television. Nerves alert you to tiny bubbles clinging to and tickling exposed skin. An orchestra of millions of snapping shrimp, coral-crunching parrotfish and barking sea lions flood the ears. The pressure of a liquid world on the body and the impaired movements of your appendages help you to better understand how powerful the ocean is and make you appreciate the adaptations of marine creatures. Adrenaline pounds through your veins heightening your awareness of shadows in the distance, the beating of your heart, and even the labor of each breath.

Getting below the waterline is an emotional and thus memorable way for students to learn about marine systems and individual organisms. Posing for your dive buddy in an underwater photo while holding a bumpy-skinned, five-armed sea star, whose tube feet are clinging to your hand, is an unforgettable way to learn about echinoderms. Remembering how disgusted you felt at the sight of plastic litter on an otherwise pristine beach can inspire environmental action and responsible consumerism long after the experience is over.

Understanding the ocean is similar to learning a foreign language. To master a language, students must speak the

words and hear native dialect. To truly understand the ocean, students must be immersed in its culture – interact with it, feel it, taste it, hear it, and meet its inhabitants gill-to-snorkel.

Marine science is more than graphs, plankton counts or surface currents mapped on a chart. It is also about helping students make connections. The ocean is vital to sustaining life on earth. It drives weather patterns and is the main source of protein for one quarter of the world's human population.

Yet the oceans that sustain us face daunting challenges. They collect debris that wind and rain wash into rivers and storm drains. More than 200,000 sea birds starve to death each year with their bellies full of Lego pieces, toy soldiers and bottle caps. Plastics, industrial waste, household chemicals and oil spills dissolve their toxins into the ocean. A growing human population and harmful fishing practices have depleted thirteen of seventeen major fisheries, making food scarce for people and wildlife alike. Increased absorption of atmospheric carbon is making oceanic waters more acidic, thereby dissolving the shells of zooplankton and threatening the very foundation of the marine food web. As daunting and enormous as these problems are, all are related to consumerism and can be addressed by modifying choices we make each day.

Changing lifestyles, however, involves changing one's personal ethics. As an educator, I struggle to find ways to help students care enough to want to change without shocking them with laundry lists of environmental doom. In his book *Last Child In The Woods*, Richard Louv showed that when students are bombarded with images of environmental Armageddon, they mentally remove themselves from that scenario in the same way that abused children cope with trauma.



The next generation of education will be experience-based, or what I like to call the “facilitation of fascination”. In marine science education, using the ocean as a living classroom is the most holistic way for students to understand marine systems. It can also motivate otherwise unmotivated students. The ocean has a ‘wow’ factor that transcends the stimulus-driven society students are accustomed to. Today, many youth find a walk in the woods boring. But, immersed in an underwater world, jolted out of their comfort zone and required to stay alert, students are anything but bored. The ocean helps everyone develop a sense of wonder and a space to wander, both of which result in increased concentration skills, better academic performance and healthier students due to the physical nature of the adventure.

Not every teacher can take students to the ocean, nor does every student have the resources to attend a coastal program. However, you can create meaningful student experiences in your own community which put the oceans on their radar. Consider ‘wetting down’ your curriculum by inviting photographers and travelers to share their first-hand accounts of ocean exploration. Watch a documentary about the ocean and then have them create a fictional travel journal.

The ocean is as awe inspiring and intangible as the night

sky. The Earth’s inner space is a window back in time, a setting for stories of adventure both real and fictional, a place of extremes, and a world of dreams and possibilities. It has stirred the souls of laymen and philosophers alike, inspired masterpieces, and will ultimately be the catalyst for motivating people to protect this last great frontier. Once students get excited about one day seeing a healthy, biologically-diverse ocean, they gain hope for the future and a role in the ocean’s protection.

Having facilitated over 1,000 student-ocean encounters in my career, I know firsthand the positive, life-changing effects that the ocean has on students. I tell people that I am teacher and snorkeling guide, but what I really am is a match maker. I provide the ambiance and set the mood for people to connect with, be fascinated by, and fall in love with the ocean in hopes that they will want to protect it.

Tara R. Short is the Founder and Director of Green Edventures, LLC (www.greenedventures.com), a carbon-neutral marine science eco-adventure program for educational groups and women. She is also an avid traveler and environmental activist who lives in North Las Vegas, Nevada. Follow her Tweets at @greenedventures.