Virginia Sea Grant Marine Education: BRIDGING THE GAP

Most science teachers have a story about how a field trip to the beach, a visit to an aquarium, or an investigation of pond life at the local park turned the classroom’s most reluctant learner into a curious and motivated young scientist. Educators and parents know that children are keenly interested in learning about the natural environment. We also know they are concerned about the fate and management of the Earth’s vital marine resources. But children and their teachers have little contact with the scientists and managers who are making great progress in understanding and stewarding those resources.

Marine educators know first-hand the magic that happens when students begin to understand the science and to experience the beauty of the ocean. We believe that ocean sciences should be an integral part of every student’s basic science education. Unfortunately, most students receive little if any in-depth classroom instruction in ocean sciences during their K-12 classroom years. High school earth science courses include oceanography concepts to varying degrees, but in most states fewer than 30 percent of students enroll in earth science. Oceanography is sometimes offered as a high school elective course, but these programs are not widely available and few students are able to take advantage of them.

We need to strengthen the role of marine science in school programs and in lifelong learning. It is critical for everyone to understand the importance of the marine environment and why we literally can’t live without it. The ocean is more than a home for sharks and whales and pretty coral reef fishes, it’s more than a place to swim during summer vacation. It’s 75 percent of the Earth’s surface! Oceans are a major driving force in the machinery of
our planet. Without an understanding of the role the oceans play in atmospheric science, biological and ecological systems, and human enterprise, no student or teacher can claim to be scientifically literate, regardless of the level of knowledge acquired in other science disciplines. If there is no emphasis on ocean sciences in a school’s curriculum the school cannot claim to adequately educate students about the world in which they live.

Fortunately for those of us living in the Commonwealth of Virginia, ocean sciences education is well established in many of our schools, and exciting opportunities for new programs are on the horizon. The Virginia Sea Grant Program brings together students, teachers, adult learners, marine scientists and the marine environment in many ways.

**Challenge**

A basic tenet of reform in science education is the need to incorporate current science topics, processes, and data into classroom curricula. Scientists are the source of current data and information and are best qualified to interpret it, so if ocean sciences are to become part of curricula, the ocean research community clearly needs to be involved. But there are millions of students and teachers and relatively few ocean science researchers. The challenge to the ocean science research and education communities is to reach out and develop partnerships that will leverage input from scientists to deliver quality science education to all students at all educational levels.

**Solutions**

Virginia Sea Grant’s marine educators bridge the gap between research and education. Sea Grant, at its unique position at the interface of science and society, is ideally positioned to transfer a large body of current marine science research to multiple audiences through its education and outreach programs. Sea Grant marine educators have built a suite of programs for teachers who want to bring marine science to their classrooms but lack the resources or knowledge to do so, and for researchers who seek opportunities for outreach.

**Examples**

**Graduate Courses for Teachers**

Thanks to an effective collaboration between VSG educators and VIMS faculty, a 3-5 day graduate course offered each summer at VIMS or the VIMS Eastern Shore Laboratory in Wachapreague, Virginia gives secondary teachers the chance to live and breathe state of the art marine science with VIMS staff and faculty. This program not only offers current science, it helps teachers establish links with researchers and promotes collegial sharing with other educators, building lasting relationships.
The Bridge

Internet access is commonplace in many schools today but access alone does not assure that teachers will obtain useful and accurate teaching resources. A typical Web search can result in millions of confusing page titles, and few teachers have either the time or training to find the needles that they need in the haystacks of sites competing for their attention. The Bridge (www.marine-ed.org/bridge) identifies and organizes these resources for timely and convenient access, and delivers carefully selected quality resources to teachers. Annual visitation is now approximately 250,000. These visitors come from more than 150 countries and access more than 3,000,000 files per year. More than 1,450 webpages link to the Bridge. The Bridge has received several awards, including the National Oceanographic Partnership Program’s award for excellence in partnering.

Centers for Ocean Sciences Education Excellence (COSEE)

VSG educators, in partnership with the Consortium for Oceanographic Research and Education, Sea Grant, and the University of South Carolina, are part of COSEE’s Central Coordinating Office. COSEE’s goals are to promote the development of effective partnerships between research scientists and educators, to disseminate effective ocean sciences programs and best practices that do not duplicate but rather build on existing resources, and to promote a vision of ocean education as a charismatic, interdisciplinary vehicle for creating a more scientifically literate workforce and citizenry. The project was endorsed by the Preliminary Report of the U.S. Commission on Ocean Policy as promising and recommended for increased funding and future national leadership.

Fostering Broad Impacts

VSG educators have developed a number of programs offering outreach opportunities to researchers and graduate students. Graduate students who participate in VSG’s Outlook on Ocean Science program gain valuable experience teaching in high school classrooms and working with teachers. VSG educators arrange for researchers and graduate students to participate in the National Ocean Sciences Bowl and to participate as assistant instructors in teacher education programs. The Bridge staff works with researchers in developing science education activities based on current data and posts these on the Bridge website for dissemination to the national community of educators.

Seafood Education

Fisheries issues related to Virginia’s seafood industry are a part the daily news, and seafood continues to be a popular choice for home and restaurant dining. However, the general public and culinary professionals are often confused by media reports and misinformation on seafood safety, quality, availability, and sustainability. Since the mid-1980’s, the Virginia Sea Grant Marine Extension Seafood Education Program has addressed this need for accurate information by communicating current research and consumer updates on seafood topics through programs designed to meet each audience’s needs, including the annual Chefs’ Seafood Symposium, Seafood Education Seminar series, and a Seafood Education website. VSG staff also provides curriculum development assistance to culinary educators who seek to include current seafood topics such as species biology, aquaculture, environmental issues, etc. into their curricula.

Clearly, marine scientists play a critical role in developing ocean science literacy. But professional educators, who have provided the link between scientists and teachers for the last three decades, and who do much of the legwork to make these connections pay off, are the primary builders of the bridges that close the gap.
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