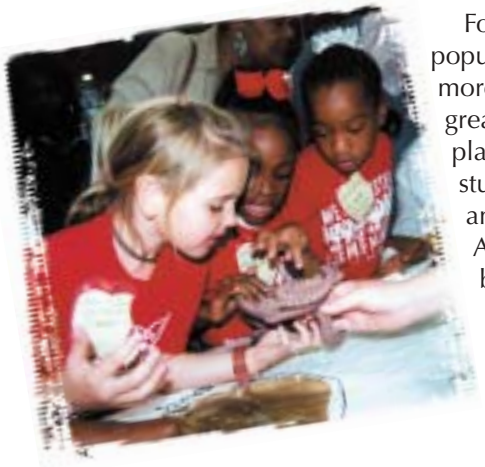
Sea Grant
Science Serving America's Coasts

Marine and Aquatic Science Literacy: Educating the 21st Century Workforce

The critical importance of education to national prosperity is underscored in nearly every study of national goals for the new millennium. To sustain a growing economy, we must also be good stewards of the natural environment. For this reason, a scientifically literate, environmentally responsible population is vital if the United States is to remain competitive in the world economy and at the same time conserve natural resources and protect the environment. The challenges facing this country call for instilling scientific environmental principles and literacy in the decision-making public while developing a highly trained, technologically capable workforce.

Educating the 21st century workforce in marine and aquatic sciences is integral to both the educational and scientific missions of the National Sea Grant College Program. Sea Grant's innovative and effective marine and aquatic education programs have been a cornerstone of the Sea Grant program and they have produced a record of successes that span three decades. The program has established and supports a network of Sea Grant educators that provides valuable leadership in marine and aquatic science education activities at the local, regional and national levels throughout this country. Sea Grant's educational efforts contribute to improving marine and aquatic science literacy by enhancing education among K-12 students, post-secondary audiences and the public using both formal and informal means. Our challenge is to ensure an educational process that increases all citizens' awareness and understanding of science and the environment.

Focusing on K-12 education



For the American population to become more scientifically literate, greater emphasis must be placed on engaging students in the activity and nature of science. As these young members of tomorrow's workforce experience the excitement and empowerment of scientific discovery, they will more readily participate in scientific endeavors and more highly value the role of science in their lives. Because local situations vary, Sea Grant educators tailor their K-12 marine and aquatic education offerings to meet the needs of their region. Sea Grant educators regularly contribute to curriculum and resource material development, teacher education and professional development, programs for school-age students and educational research. Through these local and regional efforts, Sea Grant has shown positive national impacts.

Producing environmentally literate professionals

The advent of new viewpoints, vantages and perspectives is one of the most important challenges to higher education. In addition to acquiring scientific knowledge and research skills, students need to engage interdisciplinary and multidisciplinary perspectives, to use multiple contexts in solving problems, and to communicate complex ideas well in work group settings. Fostering these important skills requires a diversification of learning opportunities at the college or university level. The Sea Grant network offers a suite of opportunities and programs to accomplish this through its support of a wide range of experiential internships, fellowships, team-based research courses, interdisciplinary courses and programs, and traditional research assistantships that broaden the experiences of undergraduate and graduate students alike. Sea Grant supports the education of our nation's future marine scientists and aquatic resources professionals by providing graduate students with the opportunity to develop their research and analytical skills by assisting faculty scientists on Sea Grant research and education projects. These students are thus better prepared to assume prominent positions in which they may direct the responsible use, sustainable development and conservation of marine and aquatic resources.

Educating in informal settings

If, as expected, the coastal population continues its rapid increase in the coming decades, so will conflicts over the use of and access to this country's marine and aquatic resources. One way of alleviating these conflicts is through informal public education. The public is fascinated with marine and aquatic natural areas and processes. In recognition of this interest, Sea Grant educators—in collaboration with a wide variety of museums, aquaria and environmental education facilities and natural sites—deliver aquatic science information to the public through lifelong learning experiences, including workshops, parent-and-child programs, field trips, lectures, Internet offerings, instructional and informative CDs, and television and radio. These programs are designed to foster environmental literacy and encourage wise use and conservation of marine and aquatic resources among coastal residents and visitors of all ages.

Envisioning the future

Sea Grant's vision for U.S. education is unambiguous: To be a world leader in developing well-prepared professionals who understand and are conversant in marine and aquatic science and research. That said, this nation has a long way to go to produce both an informed citizenry, one that is environmentally and scientifically literate, and a sufficient cadre of technical, policy and managerial professionals that can ensure a sustainable future. Sea Grant, by congressional mandate, is in the education business, and it stands ready to do its part to support a strong national education base. That role will become increasingly important as the need and demand for marine and aquatic education intensifies.

As a national network, Sea Grant has the inherent strengths necessary to be a key player in the development of that critical national education base. With more than 30 years of sustained funding, strong regional infrastructures and a commitment to education, Sea Grant is capable of making the long-term investments and providing the continuity needed to ensure meaningful education outcomes.

We have entered an era where education is vital to our national prosperity. Sea Grant is considering education more explicitly in its strategic thinking—looking at ways to develop innovative, imaginative approaches and technologies for the delivery of education; to consistently assess education efforts to ensure accomplishment of project objectives; to secure sufficient resources to accomplish the task, and to engage in partnerships with other science education stakeholders and work closely with other educators in more productive and focused collaborations. With sufficient funding, such activities will provide extensive, ongoing support to help current and future teachers advance their scientific skills, develop interesting and engaging scientific opportunities for school-aged students both in and outside the classroom, and contribute to the continuing professional development of future scientists, policy makers and resource managers.

Sea Grant

Mission

The mission of the Marine and Aquatic Science Literacy Theme Team is to identify the critical influences on marine and aquatic science literacy and to determine the ways Sea Grant educators can effect the most positive change in support of a scientifically literate U.S. population.

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