



# Ocean Sciences Education and Outreach: Identifying and Meeting Scientists' Needs

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## Survey Results

From 2003 to 2005, surveys addressing scientists' involvement in education and outreach (E&O) activities were independently conducted by three ocean science institutions (n=120 WHOI; n=80 [2004], 48 [2005] IMCS; n=121 SIO). In addition to collecting baseline data about scientists' current involvement in E&O, these surveys addressed the benefits, barriers, and issues related to their involvement. The major findings from these surveys are summarized below:

It's not surprising that the two most often identified resources hindering scientists' involvement in E&O are time and money. Scientists also identified a barrier that is related to these two issues - the lack of staff available to assist in planning and implementing E&O activities.

	WHOI	IMCS	IMCS	SIO	SIO
	2003	2004	2005	2005	2005
Time	81%	43%	62%	63%	63%
Funding	50%	34%	51%	68%	68%
Staff	42%	6%	31%	46%	46%

When asked about factors (incentives, knowledge or additional skills) that would facilitate participation in E&O, scientists identified career advancement, feedback on the impact of E&O activity, understanding the needs of the education community and learning how to get involved as the key issues.

	WHOI	SIO
	2003	2005
Career Advancement	31%	70%*
Feedback on Impact	51%	—
Education Needs	59%	44%
How to Get Involved	51%	77%

\* 85% of SIO scientists also indicated that they would find it helpful to have institutional appreciation of their involvement E&O.

While the IMCS surveys did not directly address these factors, scientists did note the need for more information on what works in E&O (10% 2004, 30% 2005).

## Abstract

As scientists face increasing demands to demonstrate the "broader impacts" of their research, a number of organizations have developed programs to assist scientists in effectively setting and pursuing education and outreach (E&O) objectives. The Centers for Ocean Sciences Education Excellence (COSEE) is a coordinated U.S. network of multi-institution partnerships designed to catalyze and facilitate interactions between ocean scientists and educators. Centers in the network share a common vision, yet they focus on diverse activities from brokering partnerships between scientists and educators to conducting professional development workshops for educators and scientists alike. In order to understand and best address scientists' needs, three of the COSEE centers - COSEE California, Mid-Atlantic, and New England - surveyed scientists about their attitudes toward and involvement in E&O. While it isn't surprising that additional time and funding top the list of scientists' needs, these survey results identify additional needs that can be more easily addressed and that can help justify the time and money scientists spend on E&O activities. Here we present the results of these surveys and highlight actions COSEE is taking to meet the needs of the ocean science community.

## Facilitative Services

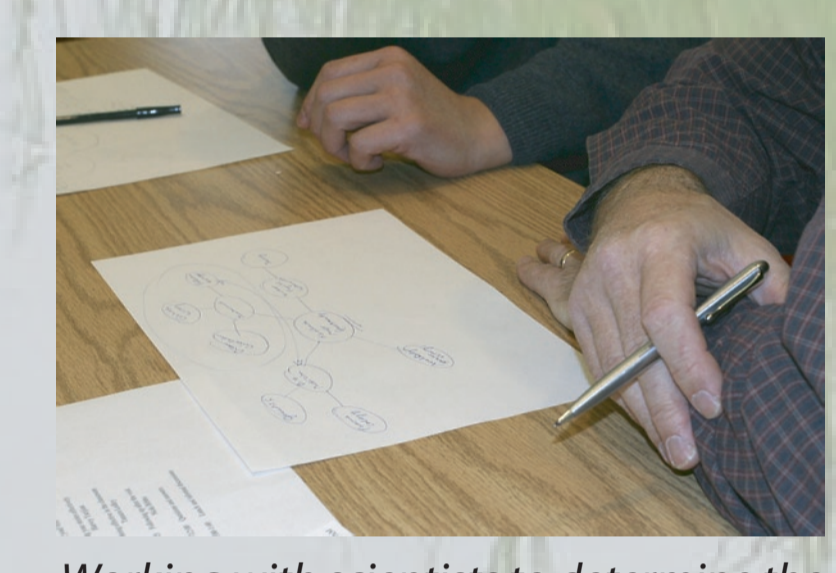
In order to address the common issue of lack of time and funding, attention is being placed on the importance of science education specialists serving in the role of facilitators of education and outreach efforts.

### Facilitators

working with scientists, contribute their expertise by:

- linking scientists to appropriate opportunities
- identifying partners for collaborations
- serving as a liaison to support partnerships
- assisting with the preparation of E&O proposals

For many scientists, conducting high-quality education and outreach activities or addressing the broader impacts of their research is something they are not yet familiar with. Facilitators are proactive, anticipate the E&O needs of scientists and can relieve much of the logistical burden of starting a new E&O project. With facilitators on staff, scientists are able to focus their time on contributing their science expertise to the E&O effort.



Working with scientists to determine the best audience for their research.



Scientists discuss their research and how best to tell their story to specific audiences.

**CRRETe: Center for Research on Educational Equity, Assessment, and Teaching Excellence at UCSD**

The CRRETe approach enables the university to bring the best of local, national, and international research to support local schools and students - to support local schools and students in using the latest innovations in learning and teaching as well as to address the needs of all students, including those who are economically disadvantaged. CRRETe also provides a forum for researchers to share their work and to consider that ethnic or economic circumstances can affect the quality of education.

**Timing:** Ongoing

**Funding:** \$1.5 million

**Contact:** Hugh McDonald, hugh@crrete.ucsd.edu

**Aquatic Activities (AqA)**

Aquatic Activities is a non-profit organization providing tuition free marine science education to underserved San Diego youth. Aquatic Activities programs connect underserved youth to science, inspire environmental action, and increase exposure to marine habitats. Approximately 7,000 youth are served each year.

**CALIFORNIA CENTER FOR OCEAN SCIENCES EDUCATION EXCELLENCE**

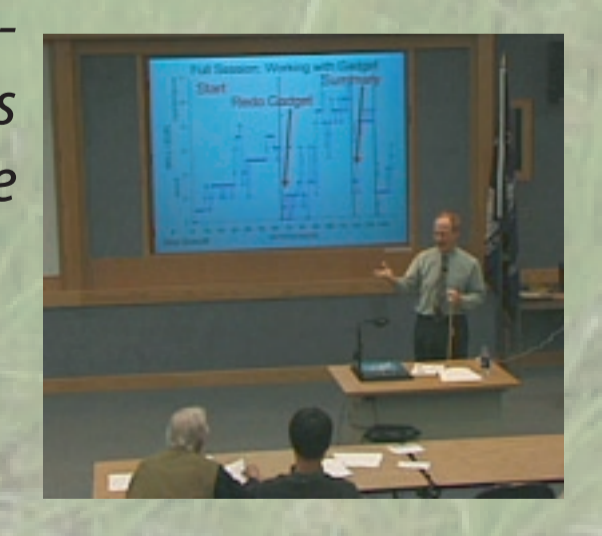
Engaging Scientists

Web sites help educate scientists about the full range of education and outreach opportunities and audiences available.



## Workshops

are an effective way to provide more in-depth professional development in regards to education and outreach. Depending on their particular needs, scientists can learn about effective partnerships (Building Pathways: Productive Partnerships Between Scientists and Educators), strategies for communicating research to various audiences (Telling Your Story), or educational pedagogy (Inquiry-Based Science).



Seminars reach scientists in a setting that is both familiar and accessible. The New England Center for Ocean Science Education Excellence (COSEE-NE) sponsors a seminar series exploring how people learn in a wide variety of contexts. These seminars help scientists better understand the research base that underlies educational practice.

**Draft Guide to Engaging Scientists and Educators in Education and Outreach**

COSEE

The guide comprises a set of tools and strategies for engaging scientists and science educators in productive and mutually beneficial relationships.

A newly developed guide will serve as a valuable resource to scientists and educators alike.

## Online resources

provide an effective means of communicating to scientists through a medium they use every day. Currently, sites are available through the COSEE network to provide information to scientists about E&O opportunities as well as resources that will enable them to plan and implement high-quality E&O activities.

## Programmatic Focus

With time identified as a key issue, it is necessary to look for creative solutions to address this finite resource. Having staff available to develop or to identify national or international E&O programs in need of scientist involvement helps to create easy access points for scientists. By contributing to existing efforts or linking to projects with well developed infrastructure, scientists can see the value of their time contribution. This type of collaboration between educators and scientists leads to quality E&O projects that address specific outcomes and are sustainable over time.

Increasing awareness of education and outreach opportunities helps scientists understand how to get involved.

## Programs

already in existence provide the infrastructure necessary for scientists to tap into. These programs may be developed by many different groups ranging from communications departments to informal science education institutions to science education specialists. The key to success is to clearly define the roles and expectations for scientists and to widely publicize the opportunities.

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With programs to plug into, scientists can get wide exposure for a small contribution of time and money.

## Professional Development

