

# Centers for Ocean Sciences Education Excellence (COSEE) Priority Recommendations Document

Sharon H. Walker, Ph.D., Associate Dean for Outreach,  
College of Marine Sciences, The University of Southern Mississippi  
Biloxi, Mississippi

*The COSEE Implementation Steering Committee and collective authors of this manuscript as are listed:*

Dr. Elizabeth Day  
National Sea Grant Office

Dr. George Matsumoto  
Monterey Bay Aquarium Research Institute

Dr. Don Elthon  
University of Texas at Houston

Dr. Ellen Prager  
Rosenstiel School of Marine & Atmospheric Science

Ms. Paula Keener-Chavis  
College of Charleston

Dr. Debbie Smith  
Woods Hole Oceanographic Institute

Dr. Nancy Marcus  
Florida State University

Dr. Sharon Walker, COSEE Principal Investigator  
J.L. Scott Marine Education Center & Aquarium

Ms. Janice McDonald  
Rutgers University

Dr. Duane Dale, Workshop Facilitator  
DFD Associates

This paper represents a *Final Report* submitted to The Division of Ocean Sciences, National Science Foundation in July 2001. The 69-page "Background Document" is based on the *COSEE Final Report* of the May 2000 Workshop attended by approximately 75 individuals from throughout this country with interests and expertise in ocean sciences research and education. The 2000 *COSEE Final Report* is located at URLs: <[www.cms.usm.edu/cosee/](http://www.cms.usm.edu/cosee/)> and <[www.cosee.org](http://www.cosee.org)>. The 2001 *COSEE Implementation Steering Committee Final Report* is located at <[www.cosee.org](http://www.cosee.org)>.

## *Overall Recommendation:*

The Steering Committee recommends the Ocean Sciences Division of the National Science Foundation provide funding for a national network of Centers for Ocean Sciences Education Excellence (COSEE) and that two types of entities be established:

- (1) Individual collaborative Centers that will collectively create the COSEE network and
- (2) A Central Coordinating Office for the COSEE network.

The COSEE Implementation Steering Committee additionally suggests the Division of Ocean Sciences be prepared to make a long-term commitment over multiple funding cycles. Initial awards should be of significant duration, preferably five years, with an annual budget of up to \$500,000 for each COSEE entity. NSF should require annual progress reports with an in-depth review at the end of three years.

Initially, a minimum of three to four COSEE entities should be established (two to three Centers with a regional and/or programmatic function and one Central Office). From the outset, other Federal agencies and other potential funding sources should be identified and encouraged to participate and provide financial support so the network can improve and expand as quickly as possible to meet

community needs.

Each Center should be a multi-dimensional partnership. A variety of organizations should be encouraged to participate including:

- Institutions of higher education,
- Research laboratories,
- Informal educational institutions such as aquaria or science centers,
- National professional associations or societies, and
- School districts or other recognized formal educational entities.

The Steering Committee envisions each Center consisting of partners from a minimum of three organizations with at least one research-focused partner and two different educational entities.

The Steering Committee's specific recommendations as to the guiding principles and highest priority tasks for COSEE are presented below, followed by a list of key attributes that should be incorporated into plans for all aspiring COSEE entities.

The Steering Committee urges NSF to encourage all applicants to review the May 2000 *COSEE Workshop Report* before applying for funding.

*Guiding Principles and Priorities Considered Essential by*

*the Steering Committee:*

*Vision:*

Citizens of all ages will have a scientifically grounded understanding and appreciation of the oceans and their relevance to everyday life.

*Mission:*

The mission of the Centers for Ocean Sciences Education Excellence (COSEE) is to significantly enhance ocean learning opportunities for all age levels (including adult and non-formal education) by incorporating the work of ocean science researchers into high-quality educational products and services and providing opportunities for networking between oceanographic researchers and educators. The COSEE network will serve as a window to ideas, information, and resources that connect and celebrate ocean sciences teaching, learning, and scientific discovery at all levels.

*Goals:*

The overarching goal is to increase and enhance collaboration and communications among ocean scientists, educators and the general public. Specific objectives include:

- Increased integration of research into high-quality educational materials and programs;
- Enhanced capacity to understand and deliver high-quality educational programs in the ocean sciences by preservice and inservice teachers, informal educators, undergraduate faculty, and educational institution administrators;
- Increased use of the creativity and expertise of science educators by the oceanographic research community;
- A deeper public understanding of the ocean and its influence on quality of life and prosperity on a global scale; and
- Improved access to information on ocean science research and educational opportunities by a diverse population.

*Central Coordinating Office Functions:*

- 1) Serve as the COSEE network's advocate for Ocean Science Education Excellence via communications, marketing, public relations, and promotion activities.
- 2) Coordinate with federal agencies and with national organizations with similar missions.
- 3) Organize an independent national oversight committee that will help shape the COSEE network.
- 4) Coordinate, facilitate, and enhance collaboration among Centers and others connected to the COSEE community.
- 5) Document COSEE activities and outcomes through appropriate
  - a) Data collection and record-keeping and
  - b) Maintaining the COSEE users' list.
- 6) Build, coordinate, and maintain the primary COSEE

website with access to an inventory of high-quality (COSEE-approved) resources with a connection to DLESE. \*\*

- 7) Coordinate services to the broader COSEE community.
- 8) Implement fund-raising and leveraging activities at the national level; conduct needs assessment for additional Centers and COSEE network activities; and advise the COSEE community about federal sources of funding.
- 9) Develop evaluation paradigms and instruments, both formative and summative.
- 10) Encourage and promote diversity in all COSEE activities and in ocean sciences and ocean sciences education careers.

\*\* The function of electronic coordination (i.e. website design and management) may be performed by either the Central Coordinating Office or an individual Center. Only one national website should be established with each Center maintaining pages on and/or connections to that website.

Although the Committee recognizes that institutions wishing to establish the COSEE Central Coordinating Office can be located outside of the Washington, D.C. area, the Steering Committee recommends such partnerships be required to demonstrate how they will provide a Washington, D.C. presence to fulfill coordinating, fund-raising and leveraging responsibilities.

*The Role of Individual Centers:*

Each Center should be a multi-faceted collaborative with the primary goal of improving the integration of ocean sciences education, outreach, and research. Although a Center may work to foster demonstration programs consistent with one or more of these approaches, its primary role should be catalytic, not programmatic. For example, COSEE funds might be used to organize workshops that provide opportunities for two-way interchange of ideas and expertise between scientists and educators.

A Center should implement several of the approaches listed below—preferably a majority of them, but not necessarily all of them. Planning documents should identify which approaches will be addressed during the initial year and in subsequent years.

*Possible Approaches for a Center:*

- Establish and/or expand linkages among those conducting ocean science research, education and outreach among diverse communities.
- Facilitate the integration of research into high-quality educational materials.
- Provide research-based pedagogical expertise and guidance for scientists involved in education.
- Build, coordinate and maintain a COSEE site webpage and/or the primary COSEE website with access to an inventory of high-quality (COSEE-approved) resources

with a connection to DLESE. (Note: *This may also be a Central Office function*).

- Create long-term professional development opportunities and pathways for a variety of COSEE users.
- Provide incentives and assistance for school districts and teachers to integrate standards-based ocean sciences resources into their curricula.
- Provide evaluation expertise and design instruments that can be used by the ocean sciences education community.
- Emphasize increased diversity as a pervasive theme to ensure that historically underrepresented groups/communities in the ocean sciences have complete access to education and research results and activities.
- Foster the effective use of information technology.
- Establish internships and provide career information.

*All COSEE planning documents should include:*

- A coherent and well-organized management plan and timeline.
- An advisory board with representation from each of the following sectors (informal ocean sciences education, K-12 ocean sciences education, undergraduate ocean sciences education, teacher preparation and teacher enhancement/professional development, ocean sciences research, and information technology).
- Proactive outreach to segments of the population that have historically been underrepresented as learners, teachers, and researchers in ocean sciences.
- Clearly defined roles for all collaborators/partners.
- Commitment to serve or promote all education sectors and levels.
- Capacity to function as a facilitator or catalyst of change.
- Capacity to understand and bridge research, media and education cultures.
- Capacity to identify additional funding sources to promote the COSEE vision.
- Demonstration of the resources and expertise to use evaluation paradigms for programs/products affiliated with all phases of COSEE.

Budgets may include salaries for staff (at up to a 100% commitment). Relevant staff may include the principal investigator, administrative officer, research specialist, education specialist, and public affairs/media/marketing specialist. Participant support costs (travel and workshop per diem) should also be a significant portion of the budget. The *COSEE Announcement of Opportunity* should appear in the *Federal Register* in the fall of 2001 with anticipated proposal submission in the early months of 2002 with initiation dates in the summer of 2002.

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