

CLASSROOM EXPLORATION OF OCEANS

2005 WORKSHOP SERIES

Dramatic new discoveries from today's explorations, deep-sea mysteries still being uncovered, and historic maritime events from the past all shape our lives and fascinate educators and students alike. Beginning in January 2005, a three-part virtual teacher workshop, *Classroom Exploration of Oceans 2005*, brought these exciting topics to classrooms, with a special focus on efforts currently underway to protect and conserve special places in the ocean and explore still unknown areas of the deep ocean.

This project was funded by a grant from the National Marine Sanctuary Foundation to the National Geographic Society. This project also benefited from support and partnership among NOAA's Office of Ocean Exploration, the National Geographic Education Foundation, The National Marine Sanctuary Program, The College of Exploration, the University of Southern California Sea Grant and California State University at Fullerton. The College of Exploration, in Potomac Falls, Virginia, was the implementing agency for this project, in cooperation with the other partners.

Classroom Exploration of Oceans 2005 was open to all educators. Resources included access to research findings, lesson plans, links to news stories, magazine articles, video clips, and Internet links. In addition, all participants received NOAA's Office of Ocean Exploration's educational resources, and will receive other lesson plans currently under development by NOAA and the Geographic.

GOALS

- To motivate and inspire educators to teach about the ocean and ocean exploration

- To raise the level of ocean awareness among the education community and ultimately increase students' knowledge and understanding of oceans
- To promote ocean-literacy and "Oceans for Life" in teachers, and ultimately students, through identifying ocean-related concepts, accessing related resources, and connecting content knowledge and understanding to learning standards
- To provide an ocean-focused community of teachers, that includes the ability to network with colleagues, communicate with content experts, and gain access to a comprehensive list of ocean-related resources
- To promote professional well-being and sense of worth, and give teachers a "sense of stature" through their interaction with their colleagues and scientific experts

REGISTRATION

These CEO 2005 workshops comprised a second series— continuing from the very successful CEO 2003 series, which had over 2,000 participants from 48 states and fifty different countries or territories from around the world. This 2005 series attracted approximately 620 new registrants from 46 U.S. states and the District of Columbia and 37 foreign countries. These new registrations were in addition to the previous, approximately 2,000 participants who were invited back to this second CEO series and were not required to re-register to access the system. Tracking data indicate many of these former participants returned for the second workshop series.

PROGRAM EVALUATION

The College of Exploration personnel established an online space for project planning, communications, and monitoring. The external evaluator was provided full access to this space to monitor internal communications as the project was developed and during project implementation. Further, the evaluator had access to all participant narrative posted in response to the keynote presentations during the workshop series to monitor for level of engagement and consistency with narrative data reported on the program survey.

Participants in each of the three workshops in the series were provided a link to an online program survey late in each workshop. The data from the first two workshop surveys were considered and used formatively to refine the subsequent workshops. It is noted that following the first survey administration, slight modifications were made to the instrument to better capture data important to the program implementation team, so some slight differences are observed in the compiled reports in the appendix. This current evaluation report is based on a compilation of survey responses for all three workshops. While this report is succinct and intended as an executive summary, the extensive data from these three surveys have been compiled for the reader and are attached in summary form as appendixes.

SUMMARY OF SURVEYS

Survey responses were generally lower in number with the current CEO series than the earlier one. This phenomena is not particularly unusual—as the online workshop experience becomes more typical for participants, the relative novelty of the survey as a part of the online experience will decline. Participants will tend to be comfortable ignoring the survey, as teachers typically do in face-to-face workshops. It may be that, to the degree that obtaining these survey responses is important to the funding agencies, that some creativity or incentivizing may be required to enhance the survey response numbers. Nevertheless, a total of 98 completed surveys were compiled to inform the program evaluation. Of these completed surveys, the majority (approximately 80%) were completed by classroom teachers, with the remaining surveys completed by a variety of professionals including scientists, university faculty, informal educators, and professional development personnel. Given the vast geographic and international distribution of the

participants and the large proportion of classroom teachers and informal educators in the registration pool and the survey response pool—it seems warranted to conclude that the project reached the target audience, i.e. individuals who could ultimately implement the curricular materials provided to them with the enhanced content knowledge obtained via the keynote presentations. Response data for these items are in the appendix as Questions (Q) 1 through 3.

An additional, interesting, observation in the survey response data is that the target audience was well distributed across all age and experience levels of teaching professionals (note Q4 and Q5 in the appendix). This suggests that the teachers who received the curriculum materials via the CEO workshop series will be in the classroom and potentially using these materials for an extended number of years. I.e., they are past the early years where research suggests many of them will leave the classroom, but they are not yet in those later career years when they will either migrate to administration or retire. Additionally, over 50% of survey respondents live greater than 100 miles from the ocean—suggesting that the funding agencies are potentially enhancing the infusion of ocean science content in inland states or countries, which is an important goal of many of these agencies (Q5).

An important observation from the survey responses is the substantial amount of time invested by the respondents in participation. Items Q10 and Q11 suggest that nearly 50% of respondents engaged more than 5 hours weekly in the workshop online, with nearly 30% of respondents engaging with workshop content an additional >5 hours weekly in offline activities. These offline activities included such things as printing and reading

keynotes, discussions, and curricular materials and resources, and—as ascertained from other narrative responses—using content and materials with students. Responses to questions 12 through 14 support a conclusion that participants were very favorably impressed with the quality of the overall experience, with the media formatting of the presentations, and with the navigability of the workshop. Finally, from 84-90% of survey respondents from each of the three workshops in the series reported that participation in the workshop resulted in an increased infusion of ocean science content in their classrooms. This overall positive assessment of the workshop by survey respondents, with their equally strong statements with respect to enhancing classroom infusion, suggests the overall workshop did succeed in meeting its core goals.

PERCEPTION OF WORKSHOP BENEFITS

Beyond the overall, strongly positive perceptions of the workshop as delineated in the likert scale responses, respondent narrative also demonstrates a perception that the workshop provided tangible benefits to the classroom teachers. Select narrative response from this item on the survey includes:

- It was a boost to my knowledge and makes me better prepared to interest students in the sciences and career possibilities.
- I enjoyed reading the keynotes, and also reading the discussion. The resources available are wonderful. I liked having the opportunity to discuss on line with other teachers who share my interest in ocean sciences, as well as having an opportunity to interact with the scientists.
- Asynchronous online learning fits my time constraints well. The keynotes are informative and interesting and the opportunity to ask questions is one of the most exciting aspects of the workshop. The photos are fantastic. The information provided by the organizers is invaluable.
- I like the video interviews, the links to related websites for more information, and the lesson plans. These things are cutting edge, and the excitement and enthusiasm of researchers in the field is very contagious.

- This course “stretched” me by requiring me to learn more about terminology and oceanography myself and of course, in the preparation of lessons for students I always learn something.

Numerous other, similar comments were made by the respondents to the survey. There seemed to be a focus around enhancement of personal science knowledge on the part of the teachers. Further, this content enhancement came from the scientists/keynote presentations directly, but also through the discussions and comments after the presentations. The respondents learned both from the scientists, and importantly, also from their peers and colleagues as they were enabled to discuss the shared experience of the keynote presentations.

CLASSROOM INFUSION/INTEGRATION PLANS

One of the most important issues and challenges in teacher professional development is creating a link between the content knowledge and pedagogy obtained in a workshop—whether face-to-face or virtual—and the subsequent classroom teaching of the participant. In that direction, the CEO participants were asked how they intended to infuse or integrate the content, skills, and materials obtained in the workshop in their classrooms with students. The survey also solicits input from teachers who may have already implemented classroom instruction based on the workshop. Select narrative quotations which summarize the narrative responses to this item include:

- I want to connect ocean studies information pertaining to medicine to chemical procedures and chemical reactions that we study in the classroom.
- I am currently doing forensics CSI labs in all classes and will implement the new material in two to four weeks. The lesson plans are numerous. In addition, I will be supplementing existing units (i.e. climate change, taxonomy and classification) with ocean science materials. I was also pleased that I have numerous applications for physical science, physics, and chemistry classes in addition to the biology classes.

- This workshop allowed me to modify my current lessons with more up-to-date information.
- I have already shared information about climate change from the workshop; as we move into a unit on ecosystems, will use this information on NWHI and coral reefs.
- I am currently starting a unit on animal life and I have decided to make my focus ocean animal life. I will be using the information from the website on coral reefs and deep ocean habitats in my classroom. This information has increased my knowledge of the subject and I feel more at ease in teaching it now.

As illustrated by these narrative selections, teachers use the workshop information in several ways. The data describe teachers who adapt and infuse workshop content and lessons into existing courses and thematic units. Further, the data describe teachers who use the workshop content, skills, and materials to create new units of study within existing courses. Finally, the narrative describe teachers' expressions of increased confidence with their own content knowledge as a result of workshop participation, as well as satisfaction with the usability of the lesson plans and resource materials they received in the workshop. The appendix to this summary report includes the entire transcript of narrative responses from the survey for further use of the funding agency.