

INTRODUCTION / OBJECTIVES

The Centers for Ocean Science Excellence: Central Gulf of Mexico (COSEE:CGOM) engages scientists in summer institutes in two ways: (1) During a week-long face-to-face experience and (2) During a three-week long on-line experience. In the face-to-face experience, scientists and teachers are teamed together to develop lessons/materials the teachers can take back to their classrooms. During the on-line experience the scientists prepare a presentation using a variety of interactive electronic formats and also engage with the teachers through a discussion board. While the teachers prepare lesson plans/materials based on the content presented by the scientists, they have the opportunity to ask questions of the scientists.

This study builds on previous evaluation efforts conducted by the center by:

- Examining which presentations were perceived effective and valuable by the teachers and how the scientists that conducted them viewed the experience;
- Examining the perceived impact on the scientist's research, teaching and/or service because of their participation in COSEE:CGOM programs; and
- Determining what the scientist's views are on the benefits or drawbacks to engaging educators.

STUDY DESIGN AND DATA

- Asked teacher-participants to fill out a survey in the face-to-face and online workshops to determine the most effective and valuable presentations;
- Obtained qualitative feedback from teachers to expand upon what they liked and disliked from the scientists presentations;
- Interviewed scientists from the institute to gauge their opinion of the institute and the benefits / drawbacks of working with teachers; and
- Asked scientists to give their opinion of engaging scientists in education as a whole.

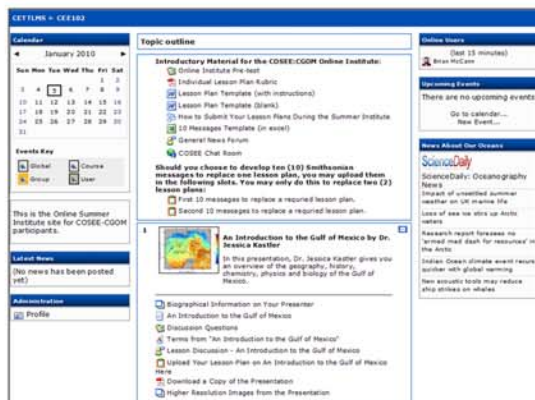


Figure 1. The Moodle® Learning Management System was used to collect survey and feedback data from teachers and scientists along with direct interviews.

TEACHER PERCEPTIONS

Several observations were made by the teacher-participants:

- The presentations that scored the highest were those in which the scientist had made an effort to relate their research to their level and in a format they could use to develop lesson plans for their classroom;
- They enjoyed opportunities to explore real-world research and how it relates to their lives and the environment around them;
- They were quickly turned off scientists that would not respond to them or talked over their heads; and
- They were responsive to scientists that revealed a general interest in them and their profession.



Figure 2. Teacher-Participants Engaging with Scientists

SCIENTIST PERCEIVED IMPACT

Observations made by the scientists in the face-to-face and online portions of the institute included the following:

- They learned a lot about the needs of teachers and how information needs to be communicated to them; indeed, one scientist had to completely rethink how they presented their material in the online program as it first was far too technical for the teacher-participants;
- Several scientists noted that after participating in workshops where they engaged teachers, it opened their eyes to the way they do science and research, and how they can do more to communicate their research to the public;
- It is not for everyone, since it takes a great deal of time that could be used for research or field work, but for those that can make the time and invest the energy needed to engage teachers effectively, then it can be rewarding;
- It is probably best suited for scientists that are starting out, such as grad students, or those post-tenure; and
- They were unaware of the needs of teachers in the classroom and how their time can be very beneficial to the teachers; however, they noted that one has to be cognoscente of what the needs of the teachers are and not expect that a scientist's research or what they want to talk about will be relevant at that specific time or location.

SCIENTIST VIEW ON ENGAGING TEACHERS

The late-career scientist had not participated in education outreach and had focused much of his career on science and graduate education. He observed that:

- There is a cost to anyone that considers education outreach in terms of taking time out of their career; and
- Those scientists that can make it work can make a tremendous contribution to the classroom.

The mid-career scientist had completed the tenure process and got interested in participating in the COSEE workshops since they have school-aged children. He stated:

- He was a fairly traditional academic that had believed that you should be in the lab or out doing research, but had observed a lack of broad science outreach in his children's classroom; and
- That he had gotten reinvigorated with science education and sees a personal gain as a researcher.

The early-career scientist was a graduate student that was in their last year before graduation and participated in COSEE workshops the previous year and the current study year. She noted:

- That it was a good experience, but was not something that they had anticipated being involved with in grad school;
- Was a great opportunity to do something outside of their comfort zone; and
- That coming into the program, they knew their science, but not how to effectively communicate it all the time; however, she now feels comfortable doing so.

CONCLUSIONS

The findings from the evaluation has indicated that many of the scientists gain knowledge of teacher expectations and requirements placed on teachers by local, state, and national standards. Scientists have also indicated that the experience helped them with preparing and presenting their research to the K-12 education community as well as to the general public. Also, scientists believe this experience has opened doors to a wider population for the dissemination of their research. Almost all scientist talk about a paradigm shift in their thinking about working with teachers and plan to continue working with teachers in the future.

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