Bringing Current Ocean Sciences and Communications Skills to Informal Science Educators

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Professional Educators working in informal science education institutions (ISEs) are primary sources of public audiences learning about the ocean and ocean sciences, yet they have few opportunities for professional development.

A national needs assessment with education staff and directors at Association of Zoos and Aquariums (AZA) institutions (n=59) shows that informal educators need professional development in communication and pedagogy.

Two different questions addressed the question of content of professional development. The first asked of professional development and the second about skill sets educators would like to see for themselves or their staff. The range of answers to both questions were remarkably similar, focusing on teaching/communication methods, science content, and evaluation/training.

• Educators recognized a need for pedagogical and communication skills:
  • 46% or respondents suggested that methods of teaching and communicating should be the core of professional development.
  • 39% claimed that they or their staff needed such skills.
  • A similar pattern can be seen for content knowledge:
  • 51% felt this was the primary role of professional development. Professional development seems to be perceived as primarily about delivering new science content rather than as a source for learning new methods of teaching and communicating science.

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What should professional development cover?

Where respondents get professional development

Educators at AZA institutions currently get most of their professional development in corresponding team in house trainings and local workshops (other), with AZA the second most frequent source (39%) of professional development. This includes regional branches AZA, conferences, AZA school, and publications. 29% report NSEA as the primary source of professional development, and about 15% get professional development from NITA and NMEA together—about the same as colleges and universities.

• It also showed that colleges and universities are underutilized resources

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One model for universities to to fill that gap is the NSF funded Communicating Ocean Sciences to Informal Audiences (COSIA) course.

Communicating Ocean Sciences to Informal Audiences (COSIA) is:
  • An NSF-funded Informal Science Education project,
  • A collaboration between 3 years of marine informal science education institutions and nearby colleges or universities.
  • Strategic, long-term three-way partnerships to improve ocean science education in informal settings.

One of the major initiatives of the project is the COSIA course:
  • colleges/universities work with local aquariums/marine science centers
  • undergraduates/graduate students touch the public about current discoveries in ocean sciences.

The course focuses on:
  • opportunities to explore and apply current learning theory and instructional strategies geared toward informal learning environments,
  • engages students in communicating ocean sciences at the informal science education institutions,
  • opportunities to design an activity to be implemented at an aquarium or science center.

The course has influenced the way I think about teaching and learning.

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What further skills would you like your staff to have?

COSIA at OSU pairs graduate students in ocean sciences with pre-service teachers to prepare both to better communicate with public audiences.

4 COSIA workshops taught in 4 years by OSU staff for educators from 4 institutions:
  • Maryland Science Center and National Aquarium in Baltimore, MD:
    • Two sets of workshops 24 participants
  • Hatfield Marine Science Center Visitors and Oregon Coast Aquarium, Newport, OR:
    • Two sets of workshops 24 participants
  • Curriculum modeled on COSIA graduate class at OSU:
    • Pedagogical and content knowledge presented through modeling interactive communication techniques.

Observations (n=19) interviews (n=11) show staff are:
  • Adopting COSIA principles into their new courses
  • Co-teaching COSIA strategies with interpreters or teachers.

One of the major goals of the COSIA project is to provide educators with opportunities to explore and apply current learning theory and instructional strategies geared toward informal learning environments.

New collaborations between organizations:
  • New collaborations between organizations
  • Monthly educator meetings between National Aquarium in Baltimore and Maryland Science Center

Professional development like COSIA that combines active learning with communications modeling can create effective learning environments for educators.

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