Graduate Students and K-12 Ecological Outreach Programs: Challenges and Benefits

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GK-12: Down to Earth Science

ECOLOGY EXPLORERS

Abstract: K-12 education outreach programs are one way that Universities share their on-going research projects with the community. As active participants in research, graduate students can contribute positively to these outreach programs. They can also gain experience in sharing their research with the general public. We have integrated graduate students into the Ecology Explorers program, the K-12 outreach program of the Central Arizona—Phoenix Long-Term Ecological Research project, since its inception. The role played by these graduates students range from short-term contact with teachers and students to year-long placement in classrooms via Arizona State University's GK-12 program. This poster will focus on some of the challenges and benefits associated with incorporating graduate students into the Ecology Explorers program.

Contact Time: Graduate students have filled numerous rolls in the Ecology Explorers Program and have spent varying amounts of time teachers and/or students.
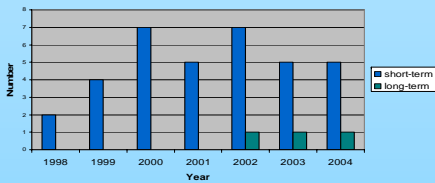
Academic year
➢ Classroom visits (usually one time only)
➢ Developing & leading activity for teacher workshops
➢ Placement for a full year in Ecology Explorer teacher classroom
  ▪ Graduate Student only
  ▪ Graduate Student directing Service Learning Undergraduates

Assisting in summer teacher internships
➢ Leading field trips
➢ Developing and leading activities
➢ Guest speakers
➢ Leading summer internships

Graduate Student Participants with Ecology Explorers

Bar chart legend: short-term, long-term. Y-axis: Number. X-axis: Year (1998, 1999, 2000, 2001, 2002, 2003, 2004)

Long-Term Contact (more than 1 month)

Benefits
• More opportunity to develop and test activities
• Opportunity to develop working relationship with teacher/students
• Lesson/activities incorporated into Ecology Explorers workshops/internships/websites

Challenges
• Variable ability to work with teachers/students
• Limited number of graduate students
• Expensive

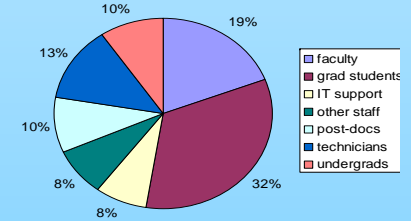**Short-Term Contact (one month or less)**

Benefits
• Increases the number of graduate students willing to participate
• Teachers get access to a variety of graduate students
• Diversity of research/expert knowledge for program
• Opportunity for grad students to try outreach education without a large time commitment

Challenges
• No opportunity to develop a working relationship with teachers/students
• High turnover, so more initial supervision by Ecology Explorer Education Team

Ecology Explorer Participants 1998-present

Pie chart values: 19%, 32%, 8%, 8%, 10%, 13%, 10%. Legend: faculty, grad students, IT support, other staff, post-docs, technicians, undergrads

Graduate Student Survey:

What was the most valuable lesson you learned from working with K-12 teachers:

• *Learned to keep information well organized, remain simple, but appeal to their intellect with applied science*

• *Learned how to get non-scientists excited about science and how to communicate scientific concepts and design activities that are age appropriate for K-12 students*

• *Learned to communicate clearly with non-experts*

Incentives for Graduate Students to Participate

Short-term contact
• Pay a modest consulting fee
• Requirement as part of RA
• Volunteer

Long-term contact
• GK-12 funding
• RA for outreach in regular proposal
• Linking with other programs such as Service Learning or Preparing Future Faculty

From Teacher Surveys:

Ecology Explorer teacher w/long-term GK-12 fellow:
This program has been invaluable to me as a teacher. I learned so many great things by working with all the parties involved. I cannot communicate how much of an impact this has had on my personal knowledge and the quality of education for students. In addition, I have been inspired to continue my education by earning a M.S. in Ecological Teaching and Learning.

Ecology Explorer teachers reflecting on Summer Internships:
The graduate students were awesome! They were patient with us and educated us about birds and plants.

XXX had a tough time keeping me engaged, yet I love learning, especially science learning! She is knowledgeable, yet with this audience of teachers……………maybe sacrifice a little knowledge for more dynamic speakers?

I would like to have my students go on a field trip or to the field with a scientist if possible, to make it more real.

The instructors, scientists, grad students, etc. were all quite knowledgeable and helpful – I learned quite a bit from all of them.