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Teaching General Biology for Nonmajors Through Community Service Projects

Mary Wells Phillips

For many students, especially for the biology nonmajors, science is often one of the last courses they take before completing their degree. Often, these students enter my course with a previous "bad" experience from courses in high school or have developed anxieties regarding what science is all about. They are reluctant learners who frequently shy from questions and classroom discussions. Their own insecurities and presumed lack of knowledge frequently leaves them floundering and confused. The message is, "I am here because I need 'x' number of science units before completing my degree."

In the fall of 1995, after 11 years of teaching biology at Tulsa Junior College, I began systematically incorporating a community-service option as part of the course requirements. Reevaluating my teaching techniques and objectives for the general biology course for the nonscience major, I felt a change in the format, content, and emphasis of the course was necessary.

I wanted students to be open to the idea of learning science as an everyday occurrence and a life-long process. More importantly, students need to know they are people who make a dif-



An eagle's nest rests atop one of many tall trees at the Sutton Avian Research Center in Bartlesville, OK. An eagle reintroduction project is underway at the facility.

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Figure 1. COMMUNITY SERVICE PROJECT

1. Choose an organization, place etc. of your choice to volunteer 20 hours throughout the semester (at least 6 visits). Remember you have to relate it to some aspect of biology!
2. On a sheet of paper write the organization's name, address, telephone number, and supervisor. I will need a copy. This information will be on your title page also.
3. Keep a log of your volunteer time.
4. Keep a journal of your visits, duties, critiques, events, any information about the organization, flyers, etc. Be creative!! You may want to take pictures or videos. Research some aspect of your volunteer experience. For example, an SPCA volunteer spent many hours bathing and dipping animals. She wrote about fleas and diseases they carried, how high they jump, etc.
5. Write a half to one page summary of your experience. Did you enjoy it? Will you continue after the project is over? What did you learn? How does the community service project relate to you and biology?
6. Have your supervisor write a letter of recommendation at the end of your service. Were you helpful, on time, dependable, courteous? How was your service helpful to them? Would they like you to continue to offer your services? Were there any duties specifically assigned to you? How did you perform them?
7. Turn in your journal/notebook with all the information above completed. Share experiences with the class.

Good luck and keep me informed of your project.

The author's instructions to her students enrolled in the Community Service Project.

ference in our community. Developing a sense of responsibility and accomplishment was my objective—students involved and learning biology at the same time. No course requirements or previous experience is necessary.

It started as a pilot program—the “I will try it and see” approach! I proposed to the students to find a place to do community service as part of their course grade. They had to spend at least 20 hours over the course of the semester, at least six visits, in any service or organization of their choice.

The students completed the Community Service Project form (see Figure 1).

Throughout the semester each student kept a log-journal of responsibilities, information they learned while performing duties, any research to explain or enhance observations, and personal impression or critique of experience. The objective was to relate the service to some aspect of biology! There was no official “right way” to do it. Every student had the opportunity to be creative, independent, and right!

At the end of the semester, the supervisor would write a letter of recommendation students could add to their personal resume file. That was the assignment!

At first, the students were not sure what constituted community service. I gave a brief definition: “Anything you do to help others, the environment, animals, and plants where you live and receive no pay, is community service.” The next question students asked was, “Where do we go?” “Wherever you can assist and be involved. You need to make the contact and be accepted in a program,” I answered. Does the SPCA count?” Yes. “What about the zoo?” Yes. “Can I go to a Veterinary office? Let me think. Yes. How about volunteering at my child’s school?” Ummm-OK. “The Oxley Nature Center?” - Yes, “US Wildlife and Fish Department?” - Yes, “Friends of Felines?” - Yes, “Bartlesville Avian Research Center?” - WOW! Yes.

I had underestimated the resourcefulness of these students. It was an awesome learning experience for me. As I personally contacted each supervisor and thanked them for allowing my students to be part of their program, I found the supervisors more than willing to give their time and energy to help students have a worthwhile and rewarding learning experience.

Discussion regarding their involvement generated interest and questions throughout the semester. Sharing their experiences and what they learned with the class, gave each one of us a new insight into our community, the needs, and the work that still needs to be done.

SOME OF THE STUDENTS' EXPERIENCES

Kelly, the SPCA student, shared about the animals abandoned and in desperate need of a home. The poor health and often abused conditions these animals come from. Her duties included bathing, cleaning cages, giving medication, walk-



Community science student volunteer Hieu Tong at the Oxley, OK, Nature Center with the director, Bob Jerring. The Center is training volunteer biology students to be naturalist interpreters for visitors.

ing and petting the animals. She attended adoption weekends at the mall. She discussed fleas and ticks, the anatomy and physiology of arthropods, included some flea and tick borne diseases, such as tapeworms, and Lyme disease. Ring worms, the reproductive system of cats and dogs and feline leukemia were other subjects she researched. The SPCA arranged for her to be part of a neutering surgical procedure! She discussed vaccinations, and other medical treatments. Kelly became close to several animals and followed them from arrival to adoption.

* * *

Cathy volunteered at the Metropolitan Environmental Trust. The organization is responsible for recycling depots located throughout Tulsa, sponsors special

days for household pollutant collection, recycling telephone book directories and a variety of educational programs. Cathy arranged for our Biology class to visit the trash to energy plant. The trip to the plant was informative and very enjoyable. Cathy writes in her journal. "The Biannual Household Pollutant Collection Event was held Saturday, October 28, 1995 and Sunday. My husband and I volunteered to work the 8:00 a.m. to 1:00 p.m. shift. My assignment was to make sure all volunteers signed in, received a color-coded name tag, and a souvenir sweat shirt. It was an incredibly successful weekend for the M.E.T., the public and our environment. This is the second year that I have volunteered for this event and I am always amazed

at the amount of community support we receive. As a volunteer, I have received compliments, offers of future assistance at this event and others, and even tips (which I would like to accept, but of course do not!) Volunteering at these events is a wonderful way to meet some fantastic people who are willing to give up free time for the benefit of others. I always come away feeling like I have contributed something important." Cathy's supervisor writes. "Dear Mrs. Phillips, Cathy a student in your General Biology class, requested that I write to you in order to verify her community service. Cathy has volunteered for the M.E.T. in excess of 30 hours assisting in both the office and the field. During my association with Cathy, I found her dependable

and diligent in accomplishing the tasks assigned to her. Inspired and skilled workers like Cathy are hard to find and we plan to create and offer her a job soon. Thank you for actively involving your students in the environmental field through community service. Encouraging this service is a positive benefit to society and your efforts are applauded. Although there are many organizations that pro-

Bettinger, who is now the Director of Research at the zoo writes, "Doug has completed his internship at the Tulsa Zoo. Doug collected behavioral data on the polar bears. The data will be added to our polar bear database. We are trying to determine how bears use the current exhibit in order to improve the proposed design of future polar bear exhibit renovation. Doug reliably showed up on

monitor the hatchling's development. Debra presented a slide program of eagles and the work at the Center. She researched the Endangered Species Act and noted one success story she personally knew. The research center asked Debra to work after her volunteer time ended! Debra writes in her journal, "This community project was helpful to me and I highly encourage others to try it in the future. Not only do many organizations need volunteer help but the student gains the opportunity to "test the waters" in the various areas he or she may be considering for a career. I gained insight into the activities of a researcher. The field work is not always as "exciting" as it may sound. Much of it is hard work that requires a good deal of patience.

Alan Jenkins stated that when working in the field anything can happen or go wrong and often does. Yet, the field work can be the most exciting part of research compared to the daily duties of record-keeping, which is tedious but necessary and often the bulk of the work involved in a research project. In the private, non-profit organizations like the Sutton Research Center, the biologists wear more than one hat. Alan Jenkins is not only the assistant director of the research center but you may also see him helping clear brush on the acreage that houses the center, or speaking to a local ornithology club to help raise funding for the projects. I was there to volunteer my time to relieve him of an overload of work, yet at times I felt I was consumer of his time with my many questions. He never failed to patiently educate me. The George Miksch Sutton Avian Research Center is a valuable asset to Oklahoma. Alan Jenkins writes, "This letter will serve to certify and thank Deborah for her community service as a volunteer for the Sutton Avian Research Center. As a volunteer she spent many hours of her time assembling and entering data the center had collected in conjunction with our Bald Eagle release project, but did not have the time to work with. Her many hours of assembling those data

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mote environmental awareness, it is individual service that creates progress towards a better planet." Your partner in the Environment, Michael Patton, Executive Director.

* * *

Don volunteered at the zoo. The Research Coordinator at the zoo asked him to record certain types of behaviors performed by the polar bears. A new exhibit is being planned for the bears at the zoo and this information may be useful to document. New toys placed in the exhibit elicited new behaviors. Don recorded how the bears interacted with each other and the toys. Don shared about learning to do a behavioral study. How tedious it seemed at times, and how exciting at others! He researched polar bears in the wild and compared their needs with those on the exhibit. He kept accurate records of his observations through video and photos. Don's supervisor, Dr. Tammie

his designated days, was meticulous in his data collection and demonstrated an ability to work independently. Additionally, he had read articles on polar bears and demonstrated both knowledge and an interest in the animals. If you need additional information, please contact me. Cheers, Tammie Bettinger, Science Curator.

* * *

Debra volunteered at the Sutton Avian Research Center in Bartlesville, Oklahoma. Her duty was to input data regarding the eagle reintroduction project into the computer. The data collected accumulated due to shortages of funds and personnel. Debra processed the data. In working with the researchers, she learned how to measure the eggs, and how many are in a clutch. She noted the sex of the first hatchling to see if one sex predominates the birth order. She observed the incubation and learned how scientists

from many different and confusing forms and her proofreading and double checking will allow us to use them for publication on the question of whether female eagles are born first from a clutch of eggs more often than males. This question has implications on the biology, conservation and evolution of eagles. Without Deborah's help the publication would have taken longer than it now will."

* * *

The student who asked to volunteer at her daughter's school is an example of many of our students who are returning to school for a degree. They are older, with children and very little extra time. Deborah wants to be an elementary school teacher. Deborah worked with a teacher developing a wetland habitat in conjunction with the U.S. Wildlife and Fish Department on the school grounds. She helped the teacher with the students, planting trees, leading discussions, and giving tours of the habitat. Deborah learned about wetlands! The animals, plants, and other factors needed to establish a wetland. She researched general information on wetlands and shared this information with the class. Deborah had the privilege to work with the teacher who became Oklahoma Teacher of the Year.

* * *

Tonya volunteered at the Oxley Nature Center. She went through the Interpreter Training course. She volunteered to take our Biology class through the trails at the nature preserve, pointing out various aspects of the habitat, plants and animals found there. She writes in her journal, "I am so glad that I was prompted to volunteer my time at the Oxley Nature Center. It was a great learning experience that I will never forget. I plan to still visit very often, as the center changes with each of my visits due to the many changes of weather here in Oklahoma. I enjoyed working with the children and hope they enjoyed their trip, and I will continue to learn about nature as it is a big part of my life! I never realized how enjoyable the outdoors can

be since I was raised in a major part of the city throughout my whole life and probably will be now that I have been out in it enough to feel comfortable as indoors." Her supervisor Linda Fritts writes, "This letter is in reference to your student, Tonya New. As part of an assignment Tonya chose to volunteer at Oxley Nature Center. We use volunteers in several capacities and Tonya chose to

What started as a pilot program continues to develop and grow. This year, the U.S. Wildlife and Fish Department wants students to help with other wetland projects in the area, to help develop mini-environmental or science lessons to take to elementary schools, and help input data of various research projects. Friends of Felines wants to do a local newspaper story on

The students' journals of their community service experience and the personal evaluations they received from their supervisors are very positive and inspiring. This year I became more involved personally doing community service right along with my students!!

become a week-end guide. In order to serve as a guide for groups, volunteers are required to complete 18 hours of training and agree to lead 6 guided tours. The training involves basic natural history of the Nature Center, leadership skills, and communication skills. We stress interpretive methods as our basis for leading tours. Tonya completed the training, led 6 groups on guided tours, and in addition, took her Biology class on a guided tour. This amount of time far exceeded the minimum required of her.

Tonya's volunteer time is invaluable to us. Our volunteers serve as an extension of our staff. It is because of people like her that we can reach out to more citizens of Tulsa and the surrounding area with quality interpretive programming. Not only was Tonya's volunteer work helpful to us, but it was of great personal benefit to her, as is shown in her recent letter.

I am very pleased to write this letter for Tonya and be of any other help I might."

the students involved in the project. The Oxley Nature Center is training students to be naturalist/interpreters! Other students are helping in the recycling efforts of our city. It is refreshing to observe student's creativity in choosing services and relating it to biology. Students are finding additional places to serve such as the local food bank (she plans to research nutritional guidelines and compare them with the food given to families), the Red Cross (he plans to understand blood and blood testing), Special Olympics (genetic disorders and learning) and one student would like to help in the English as a Second Language program. She is working on the biology connection!

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