

CASE STUDY: SERVICE-LEARNING IN SCIENCE EDUCATION
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Last fall, Dr. Beverly Cope, an associate professor of education at SW State University, decided to experiment with a service-learning project in her science education class. Middle School Science seeks to help its students develop 1. a *working* knowledge of basic scientific principles; 2. an understanding of the role of science in the modern world; and 3. an ability to “bring science to life” through appropriate pedagogies.

Six weeks into the semester, students in the class exchanged visits with middle school students at a nearby Indian reservation. A second exchange was planned for later in the semester. After her students’ first visit to the reservation, Dr. Cope asked the class to write a short “journal entry” in which they discussed what they had learned from their reservation experience. Here are two samples of what she received back.

JOURNAL ENTRY NO.1

I learned many things about science. Most of the experiments our class did were new when they first started doing them. I learned that having materials ready to go and having plenty of supplies to do the experiment more than once is a good thing. Students will want to do the experiments more than once. I learned that some experiments do cause odors which may or may not be a good thing.

I learned many things about the reservation school. The children’s teacher told us that if a white teacher comes in and is really not that interested in the culture, the children know it and will not accept that teacher. The students will run that teacher off. I learned that there was a culture barrier and both cultures were not very interested in mixing with each other. They were somewhat friendly, but I didn’t feel like we were overly welcomed. It was an experience. If I made the first gesture to speak or inquire about their culture, they seemed open and ready to share. I thought that was great.

It was super that they fed all those people. What an undertaking. Their meal was *very* nice and the potato salad was outstanding.

I wished that more parents and adults would have come around to view the students and the science projects. I wonder if we needed to invite them to come over to the tables. Did we need to invite them to come outside to see the Alka-Seltzer experiment? Did we need to find a way to better display the posters we had made. Did we need to find a way to feature those children being involved with the experiments more? I guess perhaps I was waiting for the teacher to invite the parents to come over, but she never did. I didn’t think it was our place to invite them. Perhaps we needed more visuals to post on the walls. Could we have used more room to spread out so that each person could have had a table for their experiment? That way more could have gathered round to see each one.

Overall, I thought it was a great cross-culture adventure....It gives us all a closer look into their culture and way of life. I liked how the students came to our classroom the first time to see our experiments and then we went to their school to have a science fair.

JOURNAL ENTRY NO. 2

The opportunity to travel to the reservation last Wednesday was a very eye opening experience for me. This was my first trip to a reservation and a Native American school. My parents grew up about an hour from a reservation in Montana so I grew up hearing about many of their experiences, but I loved the opportunity to see the many cultural differences for myself.

I noticed several cultural differences the first time I worked with the two students in my group. At first, they were very quiet and respectful of us when we spoke to them, but unlike most of the other groups our students did warm up to us. They were very excited about their experiment and how many variables they could change to give the film canister greater height.

When we traveled to the reservation last Wednesday, the children's teacher taught me so much about Native American schools. I never knew that the success rates of most of the Native American students were so low. She told us that they have several students that are not even reading at a second grade level when they finish eighth grade. The saddest cultural difference that she talked about was the amount of physical, alcohol, and drug abuse there is on the reservation. I really liked her statement that, "you don't have to travel to a different country to do mission work, it's right on your doorstep." That really hit home with me.

The only change I can think of that would make this experience even better would be to spend more time with the students. I felt that maybe we could go beyond just being a college student doing science experiments to being somewhat of a mentor to these students. Maybe if they had some college students to look up to, they might think the idea of working hard and getting into college would be a great experience.

I had a wonderful time with this project. You can learn so much more from a hands-on experience like this than any abstract setting on campus.

First, discuss these two student responses, identifying some of their strong and weak points. What suggestions might you make for further thought and study.

Then create a set of questions that will help Dr. Cope's students learn even more from their next visit to the reservation. The questions should include items that address the following three areas:

1. Personal learning outcomes: Questions that would help students better understand themselves, their strengths and weaknesses, as well as become better critical thinkers;
2. Academic learning outcomes: Questions that would help students better master *course-specific* topics and skills;
3. Civic learning outcomes: Questions that would help students become more sensitive to the cultural issues encoded in such a visit.

You may create as many questions as you think students can handle in a single assignment. Assume that the students' next visit will revolve around the same *kinds* of activities you can glean from the journal entries above. You may also assume Dr. Cope will hand out the question set *before* her students make their next visit.