Reflections on a Journey

by Shauneen Giudice

As educators, we talk about motivating our students, making our lessons relevant to their lives, and helping each of them broaden their knowledge base and view of the world. We find that learning involves the constant construction of meaning and that each of us takes tidbits or chunks of new information and attempts to make sense of them according to what we already know. Sometimes, we find out that the new knowledge is irreconcilable with our current vision. As we construct a new vision to incorporate the old and the new, we realize that something has to give. As educators, we must be willing to reinvent our worlds as we learn new things; to re-examine our conceptions as we encounter new views; and to re-evaluate our own subjective interactions with the new material.

Bear with me, then, through the following reflections on a shell. It is next to me as I write: a tangible focus for reflections on a journey that has had enormous repercussions in my classroom. I am a seventh grade teacher in rural Delaware. Last January, I was privileged to be part of a pilot Earthwatch-Conservation International team assigned to the Pantanal, Brazil. The Pantanal is a vast floodplain of over 200,000 square kilometers that extend through the southwestern portion of Brazil and into Paraguay. Characterized by seasonal flooding, a multitude of saltwater and freshwater rivers and ponds create a mosaic of savanna and tropical forests.

We stayed at the Fazenda Rio Negro, which is a half-hour plane ride from the nearest town of Aquidauana. Conservation International purchased the Fazenda, an old cattle ranch, as a potential center for research and ecotourism. As team members, we rose early to spend our days opening up trails or setting up observatory towers for a study of wild peccaries (pig-like mammals). On alternate days, we went marsh-mucking to collect water chemistry data, invertebrates, and fish from the ponds and rivers of the area.

In addition, as educators, we were expected to take back experiences and ideas for our classrooms. However, long after the initial glow has faded, and long after the school activities have been tried, modified, and tried again, I believe that the new world vision that I have taken from this experience ultimately will be the most important. This essay represents a piece of that emerging vision and, as such, is an incomplete but essential part of the process of redefinition.

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The Brazilian shell resting in my hand evokes memories of sand, seines, and sunsets along the Rio Negro; of Pantanal dawns and dusks from the observatory tower; and of camaraderie and comic interludes around the dinner table, in airport lobbies, and in the backs of jeeps. Although the transport of such material is illegal, this tiny, forbidden shell somehow survived, inadvertently, in the bottom of my daypack pocket.

Back home, along with some Brazilian coins, a few tea leaves, and a wayward feather caught in the pages of my journal, it became the focal point of a micro-safari for my students. For most, it was the first time they used microscopes. In fact, it may just be that this shell will be an essential part of the legacy of the Pantanal for my students. These small objects opened a new "eye to the world" for them—the eye of the microscope—and a new sense of wonder. And so, this shell is both a reminder to appreciate the youth and exuberance of my students, and a reminder of the power of small things.

Cleaned of meat, these shells were strewn on the sandy banks, and seemed especially prevalent along the shores of the brazos mortos, or "dead arms," of the river. We found them on the same day that we caught a small piranha in the cast net—after wading in the same area! We spent the same day with Guillerme, a caiman researcher, and his students. This day was a high point for me, as I finally felt confident enough of my incipient language skills to try to use them to communicate with Guillerme and his students.

They had come to spend a night and a morning with us, presumably for Guillerme to find out more about working with Earthwatch volunteers, and for us to learn more about his research. In his work with EMBRAPA (the Brazilian governmental research agency), Guillerme conducts aerial surveys to estimate the population numbers of caimans (crocodile-like reptiles found in Central and South America) and is one of numerous Brazilian scientists working on different aspects of the Pantanal. Working with Guillerme, I wondered: How will Conservation International and Earthwatch Institute mesh with the Brazilian scientists; and what role should foreign volunteers/scientists play? And so, this shell is a talisman of communication and of the wealth of science to be explored at this site.

I should have contributed the shell to the growing cache of artifacts that one day will become an interpretive exhibit at the Fazenda. Perhaps the establishment of an interpretive center will be one of the ways foreign volunteers can contribute to the area. In just the few short days of our stay, our group managed to find several skulls and make castings of some prints. As these materials are organized, future groups can add their finds to the collection and perhaps help with the actual creation of the exhibits. While I feel very strongly that the Brazilians should take leadership of all aspects of the work in their nation, I also recognize in the other volunteers and in myself the desire to be of service and to make tangible contributions. Additionally, future teachers might be encouraged to donate educational activities or resources to an educational resource center at the site. Such a resource center could benefit both Brazilian and foreign educators by providing them with ideas they could adapt to their particular situations. By seeing what others have done, they also would be able to focus on their own explorations. And so, this shell prods...
me into gathering an assortment of wetland education materials to send to the Fazenda: a small contribution to the future.

I found several of these shells the day Amadeo, our pilot, doubled as our boat captain. He took us to the study site, secured the boat, and then stood on the sidelines. Over the course of the day, however, he began to try his hand with the cast net, seine, and dip nets—he showed a great deal more patience with the latter than I did! He was especially patient with us, rewarding each small effort at speaking Portuguese with a voluminous response and optimism about our progress.

Ever gracious, Amadeo and the local Pantaneiros sometimes must have wondered “what we were about” and why we were there. In fact, one day during a break from brush-clearing, a couple of locals asked one of the scientists exactly that. It occurred to me that we probably seemed rather useless, and sometimes even a liability, to them. What did they think of our relative affluence? For example, one of our group members cheerfully bestowed most of his wardrobe on the Fazenda residents. While they appeared to appreciate the gifts and at least one man gave him a gift in return, I wondered how they really felt about the matter. And so, this tiny shell reflects the complexity of human interactions and my own regret that I didn’t get to know the Pantaneiro families better.

Although the shell was exotic to me, it was familiar to the Pantaneiros and was a reminder of the collective knowledge stored in the everyday experience of the people who live there. For example, one of the men who took us around on the boats knew most of the “good” spots for fishing and swimming on the river. Before this, he had escorted another team from Conservation International and had remembered the sites they had sampled. How can this knowledge best be tapped and incorporated into ongoing research efforts?

What about the educational needs of the Pantaneiros? Children must leave the area to study beyond the first few grades, and many adults do not complete elementary school. And so, this shell symbolizes the dynamics of implementing the Conservation International vision of ecotourism, addressing local economic/political interests, and somehow meeting the very real needs of the common people.

The shell should have stayed with Sean, the small son of our scientists. A slight six-year-old, Sean was a symbol of possibilities to me. An inquisitive, communicative child, he mixed easily with volunteers and Pantaneiros, eagerly fished for hyacinth plants from the moving boats, and enthusiastically helped me pick tiny invertebrates from our samples to preserve them—even when we had to use a flashlight because the electricity was out!

As I watched Sean and his parents, I wondered if I had been too conservative with my own children. Although my three kids have put their hours in at the side of local salt marshes, at the back of chemistry labs, and even, as infants, on my back in classes as I finished my degree, I had hesitated to choose a full-time “science life.” I opted, instead, for science education as a way to blend science and family. Maybe it really is possible to intertwine a life of field research and small children. And so, this shell is a reminder of the very human side of science as each scientist balances his or her own life.

Nevertheless, the shell stayed with me. It
currently resides in a tray of similar small items, carefully arranged in cups for my students to use with the microscopes. My students have added worms, insects, and other small critters to our microscope collection. Last spring, we spent days at the computer lab, attempting to navigate through the activities I designed for them. We also spent days learning to use plant keys, reading how monkeys make chocolate, experimenting with jungle “ooze,” using colored candies to simulate the loss of species due to deforestation, computing the edible portion of a banana, and making rubber balls from liquid latex. In fact we did just about anything I could think of to make it come alive for them. Yet, this shell continued to remind me of the power of simplicity, as my students didn’t seem to tire of looking at it, or at their pencils, or even at their own fingertips. The shell indicated to me that their worlds were expanding, to embrace the wilds of the Pantanal and the microscopic worlds on the backs of their hands.

What has happened since? Earthwatch offered me a unique chance to experience places, people, and areas of scientific endeavors that I might never have had the chance to know. Equally as important, however, it obliged me to do something with that experience above and beyond simply developing lesson plans. The technology requirement, for example, completely changed my attitude towards using computers in class—it challenged me to design webpages and activities that became integral parts of my courses and not just “add-ons.” The “down-to-earthness,” enthusiasm, and commitment of the Earthwatch scientists I worked with made me feel that real research may not only be possible with my students, but also may hold a more valid way to address state science standards.

As a result, all of my 150 students, ranging from special education to the academically accelerated, wrote their own grant proposals for funds to transform a stormwater drainage pond on the school grounds into a wetland habitat. Each student drew a plan of the area, researched plants appropriate for the shrub border, and calculated plant numbers and prices to come up with a budget proposal. Also, they each responded to the essay portions of the Chesapeake Bay Trust grant proposal form concerning the scope and sequence of the project, its connection with the water quality of the bay, and possible methods of evaluating the
success of the project and their own learning. One set of essay answers from each of my six groups was sent off with a composite budget from their individual proposals.

By April we found out that we were awarded the $1,000 for which we had applied. We ordered our plants and, by mid-May, members of the Environmental Club were giving oral and poster presentations at a special “Water Festival” organized for Delaware seventh graders. By the end of May, local businesses had contributed hoses and trowels, parents had donated an entire truckload of well-composted manure, and my students and I had installed an underground hose to water the drier areas in the back. Finally, by June, on the last day of school, we were able to plant our shrubs and begin our wetland.

Concurrently, 16 of my seventh grade students prepared “Science-in-a-Box” presentations for our feeder elementary school. Each seventh grader prepared a classroom mini-lesson that included an introduction, a demonstration or hands-on activity, and a follow-up handout or game. From a list of suggestions from the elementary teachers, my students chose topics that ranged from the water cycle to wetlands and rocks to tropical rain forests. The project was so successful that we have been invited to return this year.

Meanwhile, I continued to mull over my Earthwatch experiences and, in particular, some student responses to the slide presentation. They wanted to know how they could go on trips and how they could do field research. When one boy tried to find a volunteer placement for himself at a local park or the zoo, he was told that he was too young. I decided to try to work out something for them myself. Beyond a summer camp experience, I wanted to find some way for my students to actually work with scientists in the field. I polled my students to see who might be interested in a summer project; of those interested, six were available and were able to get parental permission, including the boy who before had been unsuccessful. We teamed up with two young scientists, Holly Toadvine and Kendra Willet. The result was a week of magic, as six kids, an old van, an island, and I combined to start a “Junior Earthwatch” program. For one week, we made a daily trek down to Chincoteague National Wildlife Refuge, where my students learned about radiotelemetry, pit-fall traps, night frog surveys, and weekly waterfowl counts.

These projects are not perfect and are still in the making. At this writing, a new school year is beginning, and I am greeting 150 new students to begin the process anew. The Brazilian shell still curls white and luminescent in my palm: tiny, fragile, exotic, an invitation to the larger world. However, the sequel to my very personal journey to the Pantanal perhaps is symbolized best by yet another shell. A shard really, it is the blunt purple-edged wampum. As a product of the ubiquitous quahog clam, it was once a medium of exchange and an adornment for coastal tribes. It is now a humble reminder of our local environment. Each year, I comb the intertidal zone of the Assateague beaches to find one hundred and fifty such pieces to give my students. They are sturdy tokens of the richness of our local environments and the thrill of meeting the challenges they present. And so, from different worlds, these mollusks are the touchstones of a reflective journey yet unfinished and of the connections still being forged between my travels and my students.

Shaun’s “Junior Earthwatch” students learn to track Delmarva fox squirrels using radiotelemetry.