**Sustainability Education within an Earth Science Course at a Small Liberal Arts Institution**

*Becca Paulsen Edwards, Department of Physics, Southwestern University*

One of the benefits of teaching at a liberal arts college is the diverse makeup of the students in each class. Teaching these students, who are largely non-scientists, an environmental studies course is an opportunity to generate balanced and educated thinking on issues of environmental sustainability. Even though many of these students are not headed to scientific fields, their knowledge of geoscience will enable them to make more informed decisions as citizens and future leaders. This sort of interdisciplinary understanding is critical to addressing the policy-science conflicts so prevalent in the current political climate.

When teaching an interdisciplinary science course to a diverse group of students it is of primary importance to maintain the rigor of the science component of the course by maintaining high expectations of the students in the area of background reading, class participation, and lecture attendance. In addition to placing heavy emphasis on understanding the scientific part of the curriculum, it is important to build in multiple opportunities for the students to apply their scientific understanding to interdisciplinary issues of environmental sustainability. Most of the students in the most recent offering of this course had an interest in environmental policy, so issues of sustainability were particularly interesting to them. For example, during our unit on stream flow, we discussed the natural processes associated with river flooding and delta building. Once the students were comfortable with that material, I was able to devote some time to discussing how the interruption of those natural processes have led to the deterioration of the wetlands in South Louisiana and the subsidence of the land in New Orleans. Later in the semester, after the students learned about the meteorology of hurricanes and tropical storms, they continued the discussion of New Orleans vulnerability to storm surge. Again, the discussion was framed as both a scientific and political issue, with a heavy emphasis on what should be done going forward from an environmental sustainability standpoint. Another example of combining geoscience material with a sustainability focus is our discussion on hydraulic fracturing. After watching a PBS Frontline documentary on hydraulic fracturing, the students discussed the benefits of natural gas as a cleaner alternative to burning coal for electricity generation. Then they discussed whether those benefits justified the risks of hydraulic fracturing, with all its associated environmental sustainability concerns (groundwater contamination, alteration of topography, etc). The diverse classroom makeup has been invaluable when having classroom discussions about the inherently interdisciplinary topics unique to an Earth Science course, including government response to Hurricane Katrina, and Global Climate Change in addition to the ones mentioned above. It has been a source of great enjoyment to hear, for example, a sociology student tie together the both hard science he has learned in the course and his own thoughts on the treatment of the poor population of New Orleans following Hurricane Katrina.

The students were motivated to learn the scientific fundamentals that made up the bulk of the curriculum by their interest in sustainability and environmental policy. By building in opportunities for them to synthesize the new scientific material with their background knowledge and interests in current environmental issues, the students were able to develop a scientifically accurate and balanced point of view on a number of issues of environmental sustainability. It is my hope that their experience in the Earth Science class will inspire them to approach decision making from a place of scientific understanding and not political bias.