Teaching the Liberal Arts: Geology Department

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Comment from a student:
"A liberal education is not what many of us want to pay for."

What do they want? I suspect most really don't know unless they've had a good liberal education or upbringing.

What is said to students regarding Liberal Education in the first week of classes:
The phrasing is different from the different faculty and the context in which it is said varies but the general message is: "There is value in attending a liberal arts school. Doing so prepares you for a wider variety of experiences and opportunities than a more career-focused education allows. A liberal education expands your horizons, enriches your life, and opens your eyes to a broader interpretation of events. A person's career my take many paths and being able to adapt, to solve problems, and to work with other people are all attributes of a well-educated person. "

"The value of a liberal education depends on more than what you listen to in class and read in the literature. The power of a liberal education comes from learning to critically reflect on your own prejudices, recognizing them as such, and seeing your personal and your nation's actions through the eyes of a broader community. This aspect is not gained from learning the content of a subject but from expanding the content of your character."

"By the end of this course I want you to be able to see the world as a Geologist sees it. I want you to understand the interactions of various Geologic systems, to know how experiments are designed and data collected, and understand how Geologists can forecast and remediate the impact of human activities and natural processes."

"I brought up the subject of a liberal (broad) education this semester in GEO111: *Exploring the Earth*. I pointed out that in order to come up with new ideas or new ways to solve old problems it is critical to know the history of your field and the history of our culture. This is what a liberal (broad) education provides. It points out the tragic mistakes that have been made in the past. In the earth sciences there are many examples of how a current paradigm, ignorance, or a cultural bias has stifled innovation or caused problems. In our culture there have been many instances where myths, sloppy thinking, racism, or cultural bias has caused death and misery. The most important thing we can teach students is that they can avoid some of these problems by learning from the past."

"I commonly run a fieldtrip along the eastern shore of Lake Superior. Most of my students have never been to the Upper Peninsula or to Canada. Although it is a short trip it provides a brief glimpse beyond the horizon of west Michigan."

General Education in General:
Perhaps GVSU takes an over-conservative approach to liberal education. We claim to want students to develop broad and liberal thinking skills. But to do so we may over-prescribe general education courses. How can a prescribed package be called "liberal"? Is there even one student that sees our general education program as a carefully crafted curriculum designed to give them rewarding and fulfilling lives? A program intended to help them reach

their full potentials as human beings? Where is individual exploration taking place? Don't kid yourself that our students don't soon see through our parent-targeted advertising and recognize our double-speak for what it is. Can we have it both ways? Might we need to rethink gen-eds (again)?

Grand Valley in General:
"Another attribute of GVSU is centered on relationships. The faculty here is available to students at multiple times beyond the classroom. While I was a student, I developed a relationship with Dick Lefebvre that has lasted for over 30 years. He has been a mentor to me throughout my career. My nephew, a GVSU alum and geohydrologist, developed a similar relationship with Norm TenBrink. I believe that smaller class size helps to build relationships."

"One (reason students come here) is simply a matter of quality. Any student who exerts a reasonable amount of effort will receive a quality education. This is made possible by the attitude of the faculty that teaching is our main responsibility. I am not discounting research because I believe that research makes a good teacher better. While I was in grad school, I found my (GVSU) undergrad preparation to be better than many of my classmates."

How General Education Geology Classes fit into a Good Liberal Education:
One of the qualities of a liberal education is that one learns how to make informed decisions. Every American will need 3.7 billion pounds of minerals, metals, and fuels in their lifetime and generate five times that in waste. It is the primary duty of Geologists to find these resources and provide them to society while minimizing our impact on the environment. Having well-trained Geologists is also critical for natural hazard recognition, monitoring, and remediation. They develop water supplies, are the experts in remediation of contaminated water and soils, and provided candidate sites for the storage of radioactive and other waste (now a political issue).

Liberally educated students may not be Geologists, but they must understand how natural systems work, the origins of natural resources, and how those resources are managed in order to make informed decisions. If we are to minimize the impact of natural disasters, we must be knowledgeable of the causes of such disasters and develop strategies to cope with the forces of nature. These responsibilities must be shared by a well-educated populace.

GEO 201/202/203 (Geosphere, Hydrosphere, and Weather for K-8 Pre-Service Teachers)
Students gain understanding of how the world is viewed from a scientific perspective. In these classes prospective teachers actively investigate numerous problems from initiating a study, to designing an experiment, to gathering data, to interpretation, to presenting and discussing results. The students read extensively from both current and pioneering literature about earth science issues to give them broad exposure to different ideas, scientific discoveries and thoughts, and styles of communication. Excerpts from: Silent Spring, Universal Water, graduate-level texts on sedimentary environments, The Skeptical Environmentalist, Desert Solitaire, Cadillac Desert, World Water Atlas, peer-reviewed articles from Science and Nature, fraudulent articles about climate change from government-funded think-tanks, Collapse (How Civilizations Choose to Succeed or Fail), etc. are used in class discussions. Students also discuss what questions science can and cannot answer; the interface of science, society, and politics.

GEO 100, 103, 105, and 111 (General Education Geology Courses)
Students gain a perspective on how geo-scientists view the world. In lecture, students gain the requisite content knowledge in geology to make informed decisions and choices with respect to geological issues that touch their lives (geological resources, environmental impact, geological disaster planning and avoidance, etc.). In lab/discussion/field trips students learn and practice investigative and interpretive skills. Classic studies are reviewed to illustrate the scientific method as well as significant current research. Students also discuss what questions science can and cannot answer, and the interface of science, society, and politics.

GEO 300, 305, 310, and 350 (Geology Theme Courses)
Students gain a perspective on how geo-science works and how it changes as new paradigms come along. In these small classes, students actively investigate several regional and world problems. These are thinking-, project-, and field trip-oriented classes culminating in student presentations of small research projects carried on through the semester. Classic studies are reviewed as well as significant current research. Students also discuss what questions science can and cannot answer, and the interface of science, society, and politics.