A New Geoscience Program in Energy and Sustainability Management

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In 2012, I co-designed and launched a new certificate program in Energy and Sustainability Management (ESM) at Bunker Hill Community College (BHCC). BHCC's mission statement highlights sustainability and, the goal of the ESM certificate program is to enhance marketability of graduates for jobs in the emerging fields of "green" facilities operation and renewable energy services. BHCC is a large, urban campus located in Boston, Massachusetts, with a current enrollment of 13,504 students *(1)*. We are among the most diverse institutions in New England with 830 international students from 94 countries speaking 75 different languages *(1)*. Opportunities exist at BHCC to recruit and develop a largely under-explored, new pool of diverse geoscientists. However, urban community college (CC) students who are interested in a geoscience career often possess challenges such as academic deficiencies in mathematics & English, and a lack of awareness about academic and career pathways, mentorships and resources. The ESM program was designed to include the following to ensure the success of our diverse student population: innovative curriculum and skills in energy and sustainability, an industry-based advisory board, a freshmen science seminar, and accelerated and contextualized learning in English.

In Massachusetts, clean energy employment has grown by 11.2% since 2011 *(2)*. The responsibility for greening-up current institutions is expected to fall upon incumbent workers including, facilities technicians, coordinators, specialists, and business administrators. Our goal was to create a new academic certificate program in sustainability for new and existing workers. After researching sector trends and credentials, the following new courses were developed: Survey of Renewable Energy, Green Buildings, Greening Existing Buildings, Sustainable Facilities Management, and Introduction to Geospatial Technology, and Project Management for Energy and Finance. We also leveraged existing coursework in Environmental Science and Sustainable Resource Conservation. The ESM program prepares students to take the U.S. Green Building Council's LEED Green Associate exam, a nationally recognized credential for sustainability professionals. We formed a clean energy industry-based advisory board to inform us about the job market, identify training needs, review curriculum, and offer support (e.g. internships, mentorship, supplies, and guest speakers). The ESM program provides students with new skills and specialized curriculum in energy efficiency, renewable energy and sustainability to make sustainable decisions in a greening economy.

Several proven instructional strategies were included in the ESM program to enhance student success. All new and full-time students at BHCC are expected to enroll in a Learning Community Seminar (LCS). We designed a LCS in Energy and Sustainability seminar specifically for our ESM students. The LCS includes faculty advising, critical thinking, success coaching, career exploration, peer-mentoring and community engagement. In 2010, the campus-wide LCS program experienced a year-to-year retention record that is 32% higher than our general student population *(1)*. Next, we accelerated and contextualized our required English courses. For example, students can earn 6 credits in English during one semester. Contextualized learning is a proven instructional strategy relates subject matter content to real world applications *(3)*. Energy and sustainability concepts are infused across the English curriculum. These instructional strategies will address academic gaps, while at the same time, provide guidance and support for CC students.

The ESM Certificate Program launched during the spring of 2013. We built in proven learning strategies that maximize the potential for both academic and personal growth for students in a career in energy and sustainability. The clean energy sector provides direct guidance and resources in our program design. We are currently developing a new associate's degree program and plan to incorporate the same valuable support mechanisms to support this new pool of geoscientists at the CC level.

References

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3. U.S. Department of Education. 2000. Contextual Teaching and Learning. http://www.ed.gov/inits/teachers/exemplarypractices/#context

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