

# PKAL FACULTY FOR THE 21ST CENTURY STATEMENT

In recent years I have become increasingly involved in interdisciplinary and research experiences for students at various academic levels. I see these somewhat parallel-endeavors as critical components of the transformation of science education at my own institution as well as nationwide. Two of my objectives for the transformation of STEM fields at Central Washington University (CWU) are:

- ♦ the development of truly interdisciplinary, rigorous programs for STEM students from the freshman through upperclass levels
- ♦ the integration of original research opportunities and science curriculum at all levels.

Students at all levels benefit from investigating first-hand the broader elements that unite the sciences.

Several programs are already in place or proposed at CWU that move us as an institution toward achieving these goals. We are entering our second year of offering the Science Talent Enhancement Program (STEP), an NSF-funded interdisciplinary program for freshman, sophomores and high-school seniors. This program involves a two-week summer experience for high-school students to work on short, but intense, research projects with science faculty.

I am one of the coordinators as well as an instructor for the freshman component of STEP, a series of three interdisciplinary science courses team-taught by two faculty and interlinked with special English composition courses, a university advising seminar, and the opportunity for students to live in a Natural Sciences Living/Learning Community dormitory. In their sophomore year, the STEP students have the option of working with a faculty mentor on a research project.

I have been involved in other interdisciplinary projects as well, such as the planning stages for an environmental sciences major and team-teaching individual courses that combine my discipline of geology with biology, anthropology and geography. I believe strongly that these are the directions we should pursue to help our students become educated, well-rounded scientists and citizens, ready to practice science in the modern world, where they will often need to draw upon a broad base of knowledge, skills, and scientific intuition.

We are traveling down the right path toward achieving the goals I have outlined above, but the process still holds barriers to be overcome. We, as faculty, are often so focused on our own disciplines that we omit consideration of broader scientific issues in our classes and mentoring of students. The result is that undergraduates specialize and focus on a narrow disciplinary track before being exposed to a broader range of scientific thought. At CWU we are initiating the process with

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students who are already STEM majors. Integrating research and interdisciplinary endeavors into the science education of non-science majors presents a host of different challenges, including how to introduce these practices into large classes.

Of course, there is the ever-present challenge of resources: Time, funding and facilities. Several faculty and administrators at CWU have taken on the first stage of the resource problem by procuring multiple externally-funded grants for instrumentation and curriculum development.

However, the challenge that lies ahead is to use these pilot-program resources wisely to convince the university administration, and in turn, the state legislature and citizens that these practices are worth supporting in the long term. In my mind, that is the main challenge of the next 5 years that is facing those of us involved in the transformation of STEM education.

To be successful in the transformation of our own state and university culture, we must rely on the support and demonstrated successes of those at other peer institutions. Linking ourselves with nationally recognized and respected groups, such as the PKAL Faculty for the 21st Century, is the next obvious step. We are ready to share our successes and challenges with others, as well as to demonstrate to the broader community the benefits that expanded STEM educational opportunities will ultimately bring to the students, university, and society. ■