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Engaging Faculty in Internationalization

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Incorporating Internationalization in Tenure Policies

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Engaging Science Faculty in Internationalization: Teaching Innovations at UW-Madison

By Masarah Van Eyck, Laura Van Toll, Michel Wattiaux, and John Ferrick[1]

IN NOVEMBER 2009, the College of Agricultural and Life Sciences at the University of Wisconsin-Madison received support to establish a small office devoted to "globalizing the undergraduate experience in the sciences." With backing from both central administration and the undergraduate student population, our office was charged with finding ways to enrich international education in the sciences and to support science faculty who wish to introduce their undergraduates to the international aspects of their field.

Thus far, we have identified three "core challenges" that faculty encounter when internationalizing science curriculum: 1) the rigid curricular structure of science education; 2) the conviction that science and, by extension, a science education exist outside of cultural influence; and 3) a general lack of incentive for faculty to engage in international education.

Ways we have found to accommodate these challenges include: 1) advancing the partnerships that science faculty already enjoy with their colleagues in other countries; 2) tailoring study-abroad programs to the unique needs of science students; 3) focusing internationalization efforts on the applied (as opposed to basic) sciences; and 4) supporting, rewarding, and recognizing instructors who engage in curriculum internationalization.

Challenge One: Rigid Curriculum

Science education entails imparting a core set of disciplinary knowledge and applied skills in a particular sequence over the course of an undergraduate curriculum. Employers and graduate or professional schools expect applicants to arrive with this set of competencies. Curriculum committees and individual instructors recognize this pressure and prepare their undergraduates accordingly. One consequence of this rigor may be a hesitancy to take risks in curricular innovation.

Semester and yearlong study abroad programs prove particularly hard to fit into structured sequences, partly because students are unlikely to earn equivalency credits from outside institutions. Moreover, because many science students regard their undergraduate career as preparation for graduate or professional school, they can be loath to enroll in a foreign learning environment where they might be graded differently or not perform at their academic best.

Students in associate professor Michel Wattiaux's Dairy Agrosystem class sit in on a bilingual video conference with college students in Mexico (Credit: Bryce Richter/ UW-Madison).

Solution: International Partnerships, In-Class Internationalization, and Short-Term Study Abroad

Our faculty's longstanding international research partnerships offer a natural route to internationalizing their teaching. Through a small grants program, we have helped faculty develop, for example, gaming simulations for students that compare conservation efforts of wolf populations in Sweden and Wisconsin, case studies on dairy and beef cattle in Mexico, and new courses on the international aspects of food science and the global food supply. By asking award applicants to articulate the "global learning outcomes" their students will gain from these projects, we demonstrate the ways that international content can complement the assessment and learning strategies they have already set for themselves.[2] Integrating global learning outcomes into already-established diversity requirements helps incorporate—not add on—international content. We are also working with communications technology units on our campus to help faculty co-teach courses with their colleagues around the world.

Our faculty's strong partnerships with colleagues overseas also encourage students to study abroad. By connecting with institutions that our faculty know well, we can sometimes secure course equivalencies prior to a student going abroad. A more targeted and methodical approach to these partnerships could help us identify major-specific equivalencies, while stopping short of having to establish a formal dual or joint degree program.

Finally, faculty-led academic programs abroad can take place during winter or summer breaks, and provide a meaningful complement to semester-long preparatory courses. International internships also allow students to gain practical skills while developing global competencies.

Challenge Two: The Intersection of Science and Culture

Science education can seem an unlikely site for internationalization. Curriculum in both the basic and applied sciences typically imparts fundamental (and, theoretically, culturally neutral) scientific concepts in early coursework, and only applies that knowledge to solving real-world issues in more advanced courses. Moreover, there is a common belief that a sound undergraduate science education must be modeled after reductionist processes of the scientific method. This approach trains scientists to focus on a narrow set of (culturally embedded) problems identified primarily in previous scientific work. While fundamental to the scientific method, excessive reductionism in the classroom can result in a disconnect between a scientist's research and its practical applications.

In its extreme, reductionism is in direct contrast to the kinds of integrative, holistic approaches needed to address today's most pressing global challenges, including environmental concerns, food security, and global health. Neglecting to fully acknowledge that science is a human endeavor tainted in part by personal and cultural needs and biases limits its potential to ameliorate the human condition on a global scale.

Solution: A Focus on the Applied Sciences, Specialized Coursework, and High-Impact Teaching Practices

A recent article in the *International Journal for Academic Development* has helped us to address this challenge.[3] From a survey of campuses in Australia, Malaysia, and South Africa, the authors constructed a matrix of disciplines, placing them on a spectrum according to their relative amenability to internationalization.

The authors discovered that those in the "hard pure" disciplines most often viewed their fields as value-free, meaning that "culture is not of consequence" in their study and application.[4] On the other hand, those in the "hard applied" fields (science-based professions such as pharmacy, engineering, and information technology) perceived their fields as more amenable to internationalization. The latter disciplines still may have universally held concepts at their core, the authors concluded, but in practice their faculty are "more likely to recognize that students will be practicing in different belief systems and that knowledge is, in fact, culturally embedded."[5]

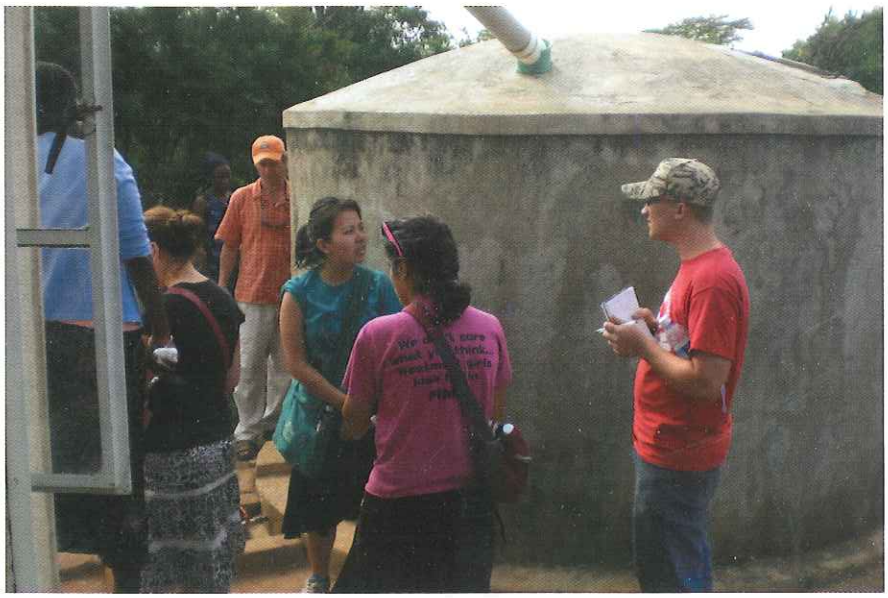
Our program's successes generally confirm these observations. Most departments that house our first internationalization projects, for example, are those that emphasize the applied aspects of science, such as forestry and wildlife conservation, animal sciences, and food science.

We have also sensed that the larger introductory science courses are full with required information, leaving little room for discussion of global perspectives. But in more advanced classes, faculty can address the application of scientific knowledge. Introducing problem-based learning can offer students a high-impact means of gaining a global perspective. A case study that requires animal science majors to "consult" with farmers in Veracruz on the reproductive cycle of their beef cattle, for example, prompts students to take into account a host of social, economic, and environmental factors. Another case study that asks ornithology students to make conservation recommendations concerning the critically endangered Montserrat Oriole in the Lesser Antilles demands that they incorporate the island culture's own perspective on wildlife conservation into their solutions.

International research internships are also an excellent means of getting students to grapple with the big ideas inherent in scientific global problem solving. Helping to develop, say, a pharmaceutical drug in Bangalore requires that biochemistry majors understand the lifestyle of populations they are serving. Experiences like these also expose students to the social realities of producing basic science in different places—limited access to certain equipment, for example, or the varying restrictions and practices that affect the production of basic science and the distribution of its benefits. Learning to apply scientific knowledge within a particular economic and cultural milieu requires that students and their instructors grasp the fact that people define problems (and, thus, solutions) differently.[6]

Challenge Three: Institutional Disincentives

One of the largest—and shared—barriers to internationalization is that higher



As part of the Health and Nutrition in Uganda course, UW-Madison students build rainwater collection tanks during a three-week field study trip in the country (Credit: Laura Van Toll/UW-Madison).

education institutions, particularly doctoral and research intensive institutions, rarely reward their faculty for engaging deeply in undergraduate education, international or otherwise. Some might argue that there is, in fact, a general disincentive for faculty to engage. A faculty member's success is measured by his or her research activities and publications. Developing and sustaining international educational components for undergraduate courses distracts them from these pursuits. Indeed, among the most frequent of the nine "resistance factors" toward internationalization identified by a University of Minnesota study are a lack of financial support, rigid disciplinary structures and standards, and restrictive promotion and tenure policies.[7]

This may explain our own observation that instructors who are hired as academic staff, not as faculty, often display a greater willingness and interest in curricular innovation. After all, they are being paid to teach. Our faculty members who are heavily invested in international education, on the other hand, often speak of a purely intrinsic motivation and reward. If they have cultivated what Sanderson calls their own "cosmopolitanism," it is largely a result of personal interest and identity—a result of coming from another country, for example, or having had personal international exposure early in one's career.[8] Almost all feel alone and/or underappreciated for doing so.

Solution: Support and Reward

Money helps. We are grateful that we can provide willing faculty with summer salary, graduate assistance, research and teaching equipment, training workshops, and other concrete support. Developing online libraries and additional systems that share these projects with their colleagues also requires resources. Beyond financial support, administrative assistance proves essential to fostering a globalized undergraduate science curriculum.

Even with ample financial and administrative support, it is really departmental and central administration that will motivate faculty to internationalize their undergraduate curriculum.[9] If we cannot succeed in fostering this cultural shift, only faculty motivated by intrinsic rewards will be willing to expend the substantial energy and effort it takes.

The fact that our office received an award from campus to support and expand our endeavors demonstrates that both central administration and the student population wish to see science education further internationalized. At our university, however, the responsibility for this shift lies squarely in the hands of faculty. We have identified three ways we hope that our work can influence their priorities.

1. We engage department heads in our process wherever possible. By requiring, for example, a letter of support from an applicant's chair and addressing letters of award to both the applicant and his or her chair, we ensure that the instructors' efforts do not go unnoticed.
2. We design our communication vehicles, workshops, and online resources to foster a community for faculty who are engaged in international teaching, encouraging them to exchange advice, support, and resources. In this way, we may avoid asking instructors to reinvent the wheel each time a new program or case study presents itself.
3. We hope that publicity, awards programs, and recognition from the highest offices on campus can raise the profile and status of faculty who are engaged in curriculum internationalization. Unquestionably, our awards cannot come close to vying with research grants when it comes to either status or monies. But sincere accolades and acknowledgement from a faculty member's colleagues and leaders cannot hurt.

Conclusion

While science curriculum may present unique challenges to internationalization efforts, the reality is that most faculty in the sciences already possess a deep understanding of the international aspects of their discipline. Finding ways to facilitate and support their own global engagement is at the heart of our internationalization strategy at UW-Madison.

We hope that our efforts to harness these individual, heretofore isolated, partnerships and projects into a more systematic and strategic platform will help forge a critical mass of activity that will raise awareness about the ways to internationalize science curriculum and foster exemplary approaches to science education worthy of recognition and reward. ■

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