

## Mixing It Up! Collaborating Across the Disciplines

### Challenges and Barriers to Interdisciplinary Teaching and Learning

- **Bauer, H.H. Barriers against interdisciplinarity: Implications for studies of science, technology, and society. *Science, Technology, and Human Values*, 15(1), 105-119.**

The search for knowledge in different fields entails different interests, and thereby different values too; and the different possibilities of knowledge about different subjects also lead to different epistemologies. Thus differences among disciplinary practitioners are pervasive and aptly described as cultural ones; interdisciplinary work requires transcending unconscious habits of thought. The more those unconscious habits are explicated and the more we understand how the disparate characteristics of the various intellectual cultures are related to the necessarily different interests, values, and epistemologies, the more feasible becomes the goal of transcending thought habits. Two sorts of interdisciplinary effort seem to have been successful: specific, delimited problems have been solved by teams in what is actually multidisciplinary rather than interdisciplinary work, and new disciplines have sprung up at the intersections of existing ones. Science, technology, and society fits neither of those patterns. Can it nevertheless be viable?

- **Gunawardena, S., Weber, R., & Agosto, D.F. (2010). Finding that special someone: Interdisciplinary collaboration in an academic context. *Journal of Education for Library and Information Science*, 51(4), 210-221.**

As research collaboration in academia has increased over the past century, so has collaboration across disciplinary boundaries, particularly in library and information sciences (LIS), a field that has long been viewed as highly multidisciplinary. This increase is driven by the pressures on faculty seeking career advancement and by the challenges faced by the scientific community that require teams of researchers with diverse, complementary skills. This work examines collaboration as it is studied from several disciplinary perspectives to lay the groundwork for a better understanding of interdisciplinary collaboration and the challenges it presents. It also provides a pathway for LIS educators to harness the benefits of interdisciplinary collaboration and to advance research and teaching in the field.

- **Hegarty, K. (2009). Sustaining collegiality through the imperative of interdisciplinary practice. *London Review of Education*, 7(1), 83-90.**

Universities face a plethora of increased - and changing - responsibilities. We are the global university, responsible for the production of worker citizens who will be 'prepared' for an extraordinarily diverse set of challenges across all facets of their lives. Much of our research concentration in the academy necessarily requires a plural, diverse approach to developing the appropriate capabilities for our students. Universities have at their disposal sophisticated self-aware multidisciplinary practitioners. Or do they? How is multidisciplinary perceived and understood in university departments and research teams? What are the tangible measures of successful multidisciplinary practice? Drawing on a cultural studies framework, this paper considers the challenges to academic identity and collegiality which reside in the assumed move to multiple ways of knowing in discovery and scholarship. How do we learn from each others' disciplinary tools, traditions and epistemologies? How are such collegial approaches - concrete collegialities - embedded in our starting discipline? The author explores these questions in relation to the UN Decade on Education for Sustainability and Sustainable Development.

- **Holley, K. A. (2009). Special issue: Understanding interdisciplinary challenges and opportunities in higher education. *ASHE Higher Education Report*, 35(2), 1-131.**

This volume reviews interdisciplinarity and higher education, focusing on the impact of interdisciplinary work related to the functions of teaching, learning, and research. For example, how do colleges and universities encourage integration among students and faculty located in separate, often isolated departments? How do institutions construct an interdisciplinary course of study that requires students to interact with faculty and areas of knowledge from multiple disciplines? What cognitive, cultural, and social challenges exist as scholars seek to achieve an integrative synthesis? This issue includes the following chapters: (1) Defining Interdisciplinarity; (2) The Disciplines, Interdisciplinarity, and the University; (3) Interdisciplinarity, Learning, and Cognition; (4) Interdisciplinarity and the Practice of Research; (5) Faculty and Institutional Structure: The Conflict of Interdisciplinarity; (6) Best Practices Related to Interdisciplinary Education; and (7) Implications for Practice and the Future of Interdisciplinarity.

- **Knotts, G., Henderson, L., Davidson, R.A., & Swain, J.D. (2009). The search for authentic practice across the disciplinary divide. *College Teaching*, 57(4), 188-196.**

This article describes the investigation of four first-year faculty. We each explored and evaluated our teaching philosophies, strategies, and roles as educators and researchers, using Bain's definition of authentic teaching and learning, the "natural critical learning environment." We identified four elements of authentic teaching and learning that cross disciplinary boundaries: 1) being present in the classroom; 2) awareness and utilization of context; 3) active engagement; and 4) ownership of education for student-centered learning. A collaborative model of professional development across the disciplinary divide is outlined, as is a model for authentically engaged teaching practices that upholds standards, while revitalizing teaching and learning in the college classroom.

- **Richter, D.M., Paretto, M. (2009). Identifying barriers to and outcomes of interdisciplinarity in the engineering classroom. *Journal of Engineering Education*, 34(1), 29-45.**

While numerous descriptions of interdisciplinary courses and projects appear in the literature, educators still lack rigorous research about learning barriers, outcomes, and interventions to support this interdisciplinary development. This paper addresses that gap by pairing a review of the literature with a case study of students in a sustainable engineering program to identify the key challenges to success in interdisciplinary contexts. The findings suggest that students (1) lack the ability to connect interdisciplinary subjects to their own more narrowly defined fields of expertise, and (2) fail to identify and value the contributions of multiple fields to complex problems. This paper concludes with possible teaching interventions to address these barriers.

- **Wade, B. H., & Stone, J. H. (2010). Overcoming disciplinary and institutional barriers: An interdisciplinary course in economic and sociological perspectives on health issues. *Journal of Economic Education*, 41(1), 71-84.**

The authors describe an interdisciplinary course team-taught by an economist and a sociologist. Historically mindful of the less than amicable relationship between these disciplines, these colleagues developed a course that attempted to illuminate the different perspectives of economics and sociology in relation to selected health themes. Such a course is either rare or unique. It served as a general social science (core) requirement and as a major elective for sociology majors. The article describes course mechanics, pedagogy and assessment, course content, and institutional barriers. The article highlights some of the challenges that exist in offering such a course - problems either less severe or nonexistent in more traditional courses.