Mixing It Up! Collaborating Across the Disciplines

Conceptual Approaches and Possibilities for Interdisciplinary Teaching and Learning

- **Bryant, M., Karney, D., & Vigier, M. (2010). What can happen when business and language faculty cooperate across an ocean? *Journal of Business Education*, 3(11), 119-129.**

  Management schools are expected to educate future professionals with the necessary skills to operate successfully in a global business environment. In this paper, the authors analyze and reflect on an experiment in interdisciplinary cooperation undertaken by business faculty at a US university and language faculty at a French School of Management. The common focus of this project has been on experiential skills development of future managers through the integration of business content, culture and language. The findings point to the crucial role that faculty play in facilitating the internationalization of the learning experience for business students.

- **Burry, Caroline Long et al. (2011). Child welfare in the court: a collaboration between social work and law faculty to prepare social work students for work with the courts. *Journal of Public Child Welfare*, 5(4), 426-444.**

  This article reports on an innovative interdisciplinary short course in which social work students work with law and social work faculty and law students in a simulated child welfare court experience. Social workers are called to work in a range of court settings including child welfare, criminal justice, and custody hearings. Social work students show interest in gaining knowledge and skills to raise their comfort level and gain competence necessary to work in these settings. The goals and structure of the course are described, in addition to lessons learned in its implementation. This description is followed by general recommendations that have come from experience with the program and feedback received from participating students and faculty.

- **Eisen, A, Hall, A., Lee, T.S., Zupko, J. (2009). Teaching water: connecting across the disciplines and into daily life to address complex societal issues. *College Teaching*, 57(2), 99-104.**

  A central problem in higher education is how to best develop in students interdisciplinary thinking and application skills necessary to work and engage effectively in the twenty-first century. Traditional university structures make addressing this problem especially challenging. Using as a model courses with diverse perspectives on water taught by interdisciplinary teams, we explore one successful approach. We highlight the importance of institutional infrastructure and pedagogical strategies that nurtured our approach and allowed it to work.

- **Mulligan, G., Taylor, N., Glen, M., Tomlin, D., & Gaul, C.A. (2011). Cross-disciplinary thermoregulation and sweat analysis laboratory experiences for undergraduate chemistry and exercise science students. *Advances in Physiology Education*, 35(2), 206-212.**

  This report reviews a cross-disciplinary (CD) health sciences project, in which concepts and students from two distinct disciplines (chemistry (CHEM) and exercise physiology (EPHE)) combined to study exercise thermoregulation and sweat analysis. Kinesiology (EPHE) students and CHEM students participated as part of their mutually exclusive, respective courses. On student evaluations, students perceived that the CD experience was valuable and that students enjoyed being able to apply academic concepts to practical situations as well as the opportunity to interact with students from another discipline of study. However, students also reported some challenges throughout this experience that stemmed from the combination of laboratory groups from different disciplines with

limited modification to the design of the original, pre-CD, learning environments. Results indicate that this laboratory created an effective learning opportunity that fostered student interest and enthusiasm for learning.

- **Pan, N., Lau, H., & Lai, W. Sharing e-learning innovation across the disciplines: an encounter between engineering and teacher education. *Electronic Journal of e-Learning*, 8(1), 31-40.**

  Practicum and internship programs are often the only means for students to connect with the outside world, and a chance to apply what they learn to real life problems. Increasingly, information and communication technology (ICT) is being used to create yet another dimension for authentic learning beyond the boundaries of the classrooms, and in addition afford collaborative and flexible learning mode. This paper details a collaborative effort between the engineering and the education disciplines, in using ICT to support students' professional growth in teacher education. An eLearning platform was created as a result of the joint effort for the training of student teachers in developing their professional knowledge in teaching and learning and gaining understanding of the work of a teacher. Through the platform, student teachers gain understanding about the teaching profession from people of the education sector; and they can reflect and share their teaching practicum experiences with each other using the online communication tools.

- **Rooks, D., & Winkler, C. (2012). Learning interdisciplinarity: service learning and the promise of interdisciplinary teaching. *Teaching Sociology*, 40(1), 2-20.**

  The authors explore the challenges inherent in traversing multiple boundaries between sociology and social work, and the academy and the community, by examining a service learning course on hunger and homelessness taught by two sociology professors and two social workers on the staff of a community service organization. The authors draw on team meetings and correspondence, observation of class sessions, and course evaluations to analyze three "moments": the planning process, a pivotal class session, and students' final presentations. They found that their teaching and students' learning were enriched by disciplinary differences in knowledge claims and the design and utility of qualitative research. They conclude that experiential learning has value beyond providing hands-on experiences. It can also provide a laboratory in which students and instructors can explore the similarities and differences between sociology, social work, and other disciplines.

- **Seo, B. (2009). A strange and wonderful interdisciplinary juxtaposition: using mathematical ideas to teach English. *Clearing House*, 82(6), 260-266.**

  Interdisciplinary concepts and methodology are increasingly common in today's secondary schools. However, many interdisciplinary lessons combine courses in related areas (e.g., English with history or science with mathematics). This article examines the use of mathematical ideas in the teaching of literature and writing. Employing mathematical knowledge in the instruction of literature and writing provides another means of illustrating literary and writing concepts.

- **Smith-Shank, D.L. & Soganci, I.O. (2011). The city as a site for interdisciplinary teaching and learning. *International Journal of Education through Art*, 7(1), 27-40.**

  In this article, the authors make a case for using the city as a classroom, and through semiotic lenses, they reflect on the assignments and the outcomes of three courses they offered in diverse geographic locations. In these interdisciplinary courses they encouraged students to purposefully explore aspects of their cities and reflect on them as multifaceted theatrical performances. The pedagogical intention is to facilitate their students' engagement with the city's identity in ways they normally would not consider.

- **Ter Horst, E.E. & Pearce, J.M. (2010). Foreign languages and sustainability: addressing the connections, communities, and comparisons standards in higher education. *Foreign Language Annals*, 43(3), 365-383.**

  This article describes an interdisciplinary collaboration that combined the study of German language with instruction in environmental issues (sustainable development). The project, involving an independent study and a classroom unit, allowed students to make connections between disciplines, establish contact with German-speaking communities outside the university, and make cultural and linguistic comparisons. By expanding the German-language content on the Web site Appropedia.org, which is devoted to global sustainable development, students took an active role in learning by creating content that can be read and used by the global community of German speakers. The results of this study show that integrating environmental issues with foreign language study provides significant opportunities for students to increase their language proficiency, develop their understanding of environmental concepts, and become involved in a global community through a virtual service learning project.

Additional pairings:

- **Art appreciation + Social Sciences and/or Science:** Law, S.S.M. (2010). An interdisciplinary approach to art appreciation. *New Horizons in Education*, 58(2), 93-103.
- **Art (ceramics) + Anatomy:** Shipley, G. (2010). Creating clay models of a human torso as an alternative to dissection. *American Biology Teacher*, 72(3), 146-147.
- **Biochemistry + Health Sciences:** Montagna, E., Guerreiro, J.A., & Torres, B.B. (2010). Biochemistry of the envenomation response: a generator theme for interdisciplinary integration. *Biochemistry and Molecular Biology Education*, 38(2), 91-96.
- **Biology + Mathematics:** Nadolski, J., & Smith, L.A. (2010). Combining efforts to encourage student research in collaborative quantitative fields. *Primus: Problems, Resources, and Issues in Mathematics Undergraduate Studies,* 20(3), 228-244.
- **Engineering + Public Health + Security:** Chanan, A., Vigneswaran, S., & Kandasamy, J. (2012) Case study research: training interdisciplinary engineers with context-dependent knowledge. *European Journal of Engineering Education*, 37(1), 97-104.
- **Hypermedia +Thermodynamics:** Schaal, S., Bogner, F., & Girwidz, R. (2010). Concept mapping assessment of media assisted learning in interdisciplinary science education. *Research in Science Education*, 40(3), 339-352.
- **Landscape Architecture + Industrial Ecology:** Sharma, A. Interdisciplinary industrial ecology education: recommendations for an inclusive pedagogical model. *Asia Pacific Journal of Education*, 29(1), 75-85.
- **Science + History + Art:** da Silva, P.R.C., Correia, P. R.M., Infante-Malachias, M.E. (2009). Charles Darwin goes to school: the role of cartoons and narrative in setting science in an historical context. *Journal of Biological Education*, 43(4), 175-180.

Links

- **UBC Wiki – Problem-based learning**: wiki.ubc.ca/Problem-Based_Learning_Teaching_and_Learning
- **UBC Mix**
  - **Wiki:** wiki.ubc.ca/UBC_Mix
  - **Website:** www.terry.ubc.ca/mix/