

Multidisciplinary education for environmental sustainability

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Abstract:

The World Commission on Environment and Development (1987) recognised the interconnection across peace, security, development, and environmental sustainability. Likewise, war and extreme economic inequality are linked to structural violence in the human community and the degradation of the biophysical environment. Because the issues are interconnected, creating communities supportive of environmental sustainability is a complex, multi-dimensional process, which is linked to concerns for positive peace and social, economic, and political justice (Schmitz, Matyók, Sloan, and James 2012).

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Beyond Disciplinary Response

The immense and multifaceted nature of the concerns cuts across disciplines and consequently demands responses that are interdisciplinary and inclusive of the social and natural sciences. While the natural sciences have an established body of knowledge in environmental studies, the human sciences lag behind. The human science fields, particularly social work and peace and conflict studies (PACS), as professions committed to social and economic justice, community

and team building, and collaboration, are uniquely situated to provide leadership in creating multidisciplinary processes of engagement in the work toward the development of environmentally sustainable communities.

Professional disciplines, however, too often educate students within silos leaving graduates ill-prepared to join multidisciplinary efforts in response to an environmental crisis (Orr 2011). Given the inadequacies of the current educational structure that values compartmentalised learning over cross-discipline collaboration, how do we educate students to engage as allies with other professional and community participants in a change process toward environmental sustainability? The design disciplines, which are transformative in nature, provide a guide toward the development of an inclusive model. While the scientific disciplines can tell us what something is and the humanities can tell us what it means, they fail to propel us toward the active creation of what is not yet present (Mendoza and Matyók 2013). In modelling the learning process after the transformative and inclusive nature of design disciplines, the potential exists for a co-creating a dynamic, flexible learning environment. New centres can be created on the margins, shifting us away from the construction of political, social, and economic elites that benefit from exploitation of the environment.

Another barrier to educating students about inclusive environmental practice exists within an academic context that does not integrate a focus on environmental concerns. In compartmentalised learning, the mega context for multidisciplinary analysis and learning does not come into focus. Consequently, courses focused on a narrow slice of environmental justice and sustainability exist in secluded pockets across campus without connection to each other. Further, disciplines often discount the language of other professions framing these “other” courses as unworthy of their focus. Students are neither aware of the range of courses nor of the connections across the issues. Setting the context at the mega level would provide the framework for cross-disciplinary connections linking fields of study, faculty, and students. A multidisciplinary network of faculty could create a model for motivating students.

Within a context where social workers are being called upon to enter the field of environmental practice (Coates 2003, Mary 2008) and PACS workers are engaging in the positive transformation of environmental conflict through sustainable peace building practices, an opportunity existed at the University of North Carolina Greensboro to create an interdisciplinary course focused on the multi-dimensional issues of environmental justice and sustainability. A faculty member from business, who focuses their work on social and environmental responsibility, joined in the process. In framing the approach to curriculum, social cubism (Byrne and Carter 2000) provided a model for the integration of horizontal and vertical thinking with multi-dimensional complexity. The social cube captures six dimensions of analysis that are necessary when investigating conflict: history, demographics, economics, religion, politics, and psychocultural factors. The cube can also help conceptualise disciplinary integration of the biological, hard, and technological sciences with the economic, political, and human sciences supporting analysis from multiple perspectives.

Reflection on Curriculum Development

A course was developed in which students work at the micro-, meso-, and macrolevels through the lens of mega analysis. At the core of the educational process is multidisciplinary team building in which students have a collective responsibility for the learning. Through this process students are immersed in a culture that values civic engagement and global citizenship. Within this collective setting students join with others as allies rather than rescuers and/or experts. These teams take on the dual role as learner and educator with responsibility for creating learning opportunities for other teams in the class.

Important to discuss here is the necessity for this type of classroom and learning to include interdisciplinary teams of faculty. In the classroom, faculty models the interdisciplinary cooperation that students are being asked to manifest in the field. The “teaching” is not simply a matter of dividing the available weeks and assigning responsibility to individual faculty for those time periods. Faculty co-teaches in real-time. Interdisciplinary faculties are always present to expand the learning.

The human systems (social, political, and economic) are actors on and within the ecological environment (see Schmitz, Matyók, James and Sloan 2013 for the model). It is through this lens that participants in the class are exposed to the impact of war, poverty, and human wellbeing within an ecological context. In addition to the history, global politics, and science of environmental concerns, students explore community development (Gamble and Weil 2010); alternative models of economics (Schumacher 1989, Shiva 2005); visionary models for environmental change (Coates 2003, Hawken 2010, Orr 2011); and conflict transformation toward the development of positive peace (Schmitz et al. 2012). The process of change is one in which the local community is recognised as the centre of expertise and knowledge building.

Structuring the Process

Multidisciplinary teamwork is integral to the development of the skills necessary to learning a process of co-creation. Within their team students discuss assigned materials, which include academic as well as popular books, articles, movies, and websites. They become educators for the class on an environmental issue, and explore an area of concern then co-create a response which is presented to the class. They are encouraged to be creative in their presentation in order to develop skills that can facilitate effective communication and change. The teams come to share beyond the constraints of disciplinary language, finding ways to work within community without elitist dialogue.

Students are introduced, often for the first time, to the need for cross-disciplinary work to address the *wicked problems*. These are problems, such as environmental sustainability, that have complex interdependencies making them “impossible” to resolve. Within the complexity, however, exists the opportunity for transformation. A case study method of teaching established a framework for the vertical and horizontal integration of learning required in addressing the *wicked problems* of environmental degradation and sustainability. A grid is used to structure learning at the mega-, macro-, meso-, and micro-levels (see Schmitz et al. 2013 for the grid).

Students analyse the issues then engage in team development of a community change project. These requirements contribute to a) the construction of citizenship by requiring diverse student

groups to work together in addressing problems, and b) the development of community approaches to environmental sustainability by *chunking* larger issues. For instance, in exploring the impact of sustainable gardens developed by refugees on the reinvigoration of decaying communities, the team becomes engaged with local, national, and global food policy; the impact of pesticides; the misuse of water; and the economics of poverty and globalised mega farms. Student teams might also start with an interest in water then move to exploration of the politics of coastal development, fishing rights and the impact of over fishing, indigenous rights, water use and water rights, and the politics of draught and war. Or, a team may begin with an interest in solar energy then explore the local, national, and international economics and politics of resource development and the links to poverty, war, indigenous rights/practices, and the depletion of resources. Other teams have explored habitat loss and the connection to community and environmental degradation. All of these issues must be explored across the micro-, meso-, macro-, and mega-levels.

Lessons Learned

Experience has helped us create a learning environment that supports students in exploring issues related to environmental degradation, disrupting this process, and gathering the skills and knowledge for developing communities that support a healthy biophysical environment. The wicked problems of our times, of which environmental sustainability is a leading one, demand expansive thinking that integrates knowledge and challenges disciplinary prejudices, which result in bounded and shallow thinking that privileges one way of knowing over all others.

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