Journal of Environmental Studies and Sciences (2018) 8:343–350
https://doi.org/10.1007/s13412-017-0467-0

Collaborative teaching and interdisciplinary learning in graduate environmental studies

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Published online: 30 January 2018
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Abstract
Many graduate programs in environmental studies attempt to foster specialized knowledge and technical skills alongside interdisciplinary collaboration and integration. We discuss strategies for addressing these distinct—sometimes competing—goals in Evergreen State College's Graduate Program on the Environment. Key strategies include (1) designing an academic program that balances specialization and integration; (2) approaching course planning with a "backward design model" that focuses on teaching outcomes rather than "covering" disciplinary content; (3) designing group assignments that require collaborative and multidisciplinary research and networking among students; (4) approaching thesis projects using place-based issues or research problems/questions developed in conjunction with local or regional organizations and a clear identification of relevant communities of practice to inform the scholarly work and analysis. Finally, we address the challenge of creating equitable social dynamics in teaching teams and offer reflections based on our 30-year tradition of collaborative team-teaching at the graduate level.

Keywords Collaborative teaching · Interdisciplinary learning · Graduate education · Environmental studies · Evergreen State College

Introduction

Interdisciplinary environmental and sustainability (IES) programs at the master's level have proliferated in recent years. The number of IES master's degrees increased by 68% between 2008 and 2012; this trend is expected to continue through the end of this decade. Many of these programs focus on interdisciplinary approaches to sustainability, energy, engineering, and global issues (Vincent et al. 2015). The emergence of new programs with diverse orientations prompted us to evaluate current models of interdisciplinary graduate education. What existing curricular structures and teaching practices help our students prepare for future environmental careers? What structures and practices should be added, strengthened, or eliminated? What can faculty and directors of long-standing programs offer to emerging programs in the way of models and reflections?

For us the 30th anniversary of the Masters of Environmental Studies (MES) degree at The Evergreen State College (Olympia, Washington) provided a unique opportunity to explore such questions. Former directors and faculty discussed the challenges of stewarding the program over three decades. Many of our approximately 800 alumni over the past 30 years have shared a recurring feedback—through exit surveys and informal conversations—about how much they valued their interdisciplinary education. Their reflections convinced us that—despite our institution's quirkiness—our curriculum, courses, and teaching practices might be of interest to IES faculty and administrators.

Since its founding as a public, liberal arts college in 1968, Evergreen has embraced interdisciplinary education. In course design, faculty teams focus on a common question or theme that can be addressed from multiple disciplines. Faculty members teach within areas of specialization but also struggle alongside students to understand material beyond their disciplines. Formal assessment takes the form of faculty narrative evaluations and student self-reflections, followed by one-on-one conferences. In order to facilitate broad collaboration across disciplines, the college operates without strong departmental structures. When faculty developed the MES program in the mid-1980s, they adopted

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these educational principles and practices from the undergraduate curriculum. With interdisciplinary team-taught courses as the norm, we have a unique perspective for assessing the benefits and challenges of this approach.

Following Mansilla and Duraising (2007, p. 337), we consider interdisciplinary understanding as "the capacity to integrate knowledge and modes of thinking in two or more disciplines or established areas of expertise to produce a cognitive advancement—such as explaining a phenomena, solving a problem, or creating a product—in ways that would have been impossible or unlikely through single disciplinary means." This performative approach emphasizes the practical outcomes of interdisciplinary work rather than valuing integration as an end in itself. They articulate three criteria of interdisciplinary understanding: (1) work shows *disciplinary grounding* by incorporating relevant theories, methods, validation criteria, and language; (2) work shows *advancement through integration* to produce explanations or solutions that are more complex, empirically grounded, or comprehensive; (3) work shows *critical awareness* of the relative merits and contributions of various disciplines (Mansilla and Duraising 2007). These criteria match three overarching objectives for our program. Recent studies by the National Center for Science and the Environment (NCSE) suggest that they are shared by many graduate interdisciplinary environmental and sustainability (IES) programs (Vincent et al. 2015).

(1) *Support for developing specialized disciplinary knowledge and technical skills that provide the foundation for integration across disciplines.*

The persistent tension between "breadth" and "depth" in the undergraduate curriculum becomes even more pronounced at the graduate level.[1] NCSE identified two clusters among graduate IES programs with respect to specialization: one educates an "environmental scientist" through "depth in a traditional discipline"; the other educates an "environmental problem solver" through "broad and flexible knowledge."[2] We have developed strategies at various levels—from overall curriculum to individual assignments—that attempt to strike a balance between disciplinary expertise and integration across disciplines.

(2) *Support for developing collaboration skills that enable advancement through integration.*

In our experience, environmental work requires collaboration with other experts from disparate backgrounds. IES programs should help students develop the cognitive and interpersonal skills required for successful collaborative work. In the NCSE survey, IES program administrators rated "teamwork" as the most important skill within the managerial/interpersonal/community engagement category (Vincent et al. 2015). We share course structures and assignments that, in our experience, help students develop their capacities for working effectively as members of interdisciplinary teams.

(3) *Support for critical awareness of interdisciplinary strategies to understand environmental issues.*

An effective scholar or practitioner must determine whether an interdisciplinary approach makes sense and which disciplines are most relevant to understand an issue or solve an environmental problem. The capacity to exercise informed judgment in such cases requires a solid foundation in key disciplines that might be relevant to an environmental issue, including basic knowledge, aims, and methodology; an ability to prioritize which disciplines should be drawn into the analysis; and the capacity to step back and consider the broader framework in which situations are defined as problems. We discuss courses and assignments that can help students develop this kind of critical and nuanced sensibility.

The main sections below examine our efforts to address these overarching objectives through (1) balancing specialization and integration in the curriculum, (2) developing interdisciplinary courses, (3) fostering collaboration in project work, (4) supporting thesis research, and (5) addressing disciplinary and social inequities in teaching teams.

Balancing specialization and integration in the curriculum

The MES program offers a 72-credit degree curriculum that typically takes 2 years to complete. To earn the degree, a student must complete first-year core courses (24 credits), electives or internships (24 credits), and a thesis project (24 credits). Each fall an entering cohort of approximately 45 students begins a sequence of interdisciplinary team-taught courses: Conceptualizing of our Regional Environment (fall), Ecological and Social Sustainability (winter), and Research Design and Quantitative Methods (spring). These courses meet twice per week in the evening. In the second year, students design and implement a thesis project, starting with Case Studies and Thesis Design (fall) and continuing with Thesis Workshop (winter, spring). The MES curriculum

[1] In the NCSE survey, graduate administrators were asked to rate the importance of 41 knowledge areas and 38 skill areas. For graduate degrees, those areas with mean importance ratings in the "moderate" to "high" range include 1 of 27 areas of disciplinary knowledge (ecology), 4 of 14 areas of interdisciplinary knowledge (climate change/disruption, natural resource management, environmental sustainability, sustainability general concepts), and 19 of 38 skill areas across all categories (Vincent et al. 2015).

[2] We suggest one caveat to the term "environmental problem solvers." A vital component of our program—and, we suspect, many other IES programs—are the disciplines (e.g., environmental history, political ecology) that provide students with a more critical and nuanced lens for viewing the way specific circumstances or events are constructed as "environmental problems." See Toadvine (2011).

structure has remained quite stable for the past 30 years, with some adjustments to reflect shifting priorities and rotating faculty (Table 1).

The MES curriculum attempts to provide a broad foundation for meaningful interdisciplinary work *and* opportunities for students to develop expertise within specific areas of professional interest. The disciplines in the core curriculum vary with particular faculty, but usually include ecology, climate science, geography, economics, systems theory, and sustainability studies. In addition, core courses address key competencies or skills, such as critical thinking, argumentation and expository writing, research and technical writing, collaborative problem-solving, statistical analysis and research design. While the first-year core curriculum reflects general agreement with our NCSE colleagues about the importance of skill areas, it also emphasizes disciplinary grounding as the foundation for interdisciplinary work.

Moreover, the overall curriculum provides many opportunities for students to develop disciplinary and technical expertise through electives, internships, and thesis research. Students may take electives and internships in both years. The electives include topics within the faculty's areas of academic specialization or professional work; some emphasize specialized skills like GIS/spatial analysis or qualitative research methods. Many students also complete internships with government agencies or NGOs to fulfill some of the elective requirements. Between the thesis and electives, students have a high level of autonomy to tailor the program's offering to their own academic and professional ambitions.

Interdisciplinary course design

Many institutions want to make team-taught courses part of their move toward interdisciplinary education. We have found that assumptions and models from our own disciplinary education can interfere with effective course design. At a broad level, many teachers feel responsible for "covering" or "representing" their disciplines, well-meaning impulses that become problematic when a faculty team must distribute class-time among multiple disciplines *and* the meaningful integration of these disciplines. In this context, teaching for disciplinary coverage is often a luxury. At a more nuanced level, most professors have absorbed assumptions about the pedagogical organization of their disciplines and transfer them to their course design. Historians, for example, typically default to a chronological arrangement of material. We recommend disrupting such fallback assumptions in deliberate ways. One approach involves adopting a "backward design" process that explicitly identifies learning outcomes and then determines the content and methods from each discipline that will help students achieve those outcomes (Wiggins and McTighe 2001). During our collective years of experience in teaching, we have experimented with many strategies for integrating multiple disciplines into a cohesive intellectual journey. Three examples from our core curriculum follow.

Strategy 1. Explore historical parallels across disciplines

Conceptualizing Our Regional Environment introduces students to key disciplines within environmental studies. An ecologist, historian of science, and political ecologist taught the program in recent years. This course integrates historical development and foundational concepts of these disciplines to highlight common assumptions and methodologies. We examine the way that ecologists embraced disparate ideas as guiding analogies: balance of nature from natural theology, competition and natural selection from laissez faire economics, ecological succession from developmental physiology, environmental determinism from geography, and feedback loops from systems theory. We also explore how ecology has served as an inspiration for political movements concerned with population growth, resource conservation, and climate change. Both lines of inquiry raise questions about the way scientific expertise has both reified and challenged economic and social inequities. We hope students learn that cross-fertilization between disciplines has a complex and problematic history that precedes the emergence of "interdisciplinary" as a buzzword in the late twentieth century.

Strategy 2. Address a pressing environmental problem using knowledge and methods from multiple disciplines

Ecological and Social Sustainability addresses theoretical, practical, and ethical challenges of sustainable development through systems thinking, complexity, and interdisciplinary problem-solving. For the past 2 years, our faculty team had expertise in biogeochemistry, political ecology, and economics. We integrate these disciplines around the multi-faceted problems posed by global climate change. As context for current anthropogenic changes in carbon dioxide emissions, we study the carbon cycle over different geologic timescales up to the present. We explore what changes in economic structures, activities and policies are required to achieve emission reductions, and how these policies may ultimately fail if so-called "solutions" lead to greater marginalization of vulnerable groups. By examining climate change through these different perspectives, students employ an interdisciplinary, systems-thinking approach to grapple with the most pressing environmental issue of our lifetimes.

Strategy 3. Develop technical skills through applications across multiple disciplines

Research Design and Quantitative Methods builds on the principle that many social and natural sciences use common

Table 1 Core curriculum in Evergreen's MES program

First year (core courses): 24 credits		
Fall	Winter	Spring
Conceptualizing Our Regional Environment	Ecological and Social Sustainability	Research Design and Quantitative Methods
Second year (thesis): 24 credits		
Fall	Winter	Spring
Case Studies and Thesis Design	Thesis Workshop	Thesis Workshop

statistical methods. For the past 2 years, an ecologist, economist, and policy expert have taught the course. We focus on skills acquisition and practice in lectures, computer labs, and projects with examples that illustrate the use (and misuse) of quantitative methods from many disciplines. Students grapple with data sets from ornithology, herpetology, forestry, biogeochemistry, economics, and energy studies to get practical experience analyzing real world data. Finally, they write a grant proposal that articulates a well-grounded research question and develops a quantitative methodology for answering it. By illustrating how quantitative skills transcend disciplinary boundaries, this approach motivates students to acquire and refine statistical competence. They come to value their new expertise as a foothold for understanding diverse areas of knowledge.

Fostering collaborative skills through group project work

The previous section offered some models for faculty to consider when designing integrated courses; this section describes a major project that provides students with authentic and practical experience collaborating across disciplines. In Conceptualizing Our Regional Environment, students mimic a common professional experience by working in small groups to study a local environmental problem and propose a workable solution. The assignment has three main objectives: (1) to improve research and writing skills, (2) to develop cognitive and interpersonal tools for teamwork across disciplines, and (3) to introduce students to major environmental issues in the Pacific Northwest. Here, we describe our approach to this assignment, as well as the some of its rewards and challenges.

Group project structure and assignment sequence

Because teamwork is integral to professional success, we devote time to this project each week. During the first week, the class brainstorms a list of local environmental problems and forms interest groups of 3–5 students around these problems. Group members share an interest in a given topic (e.g., understanding the impacts of ocean acidification on local oyster hatcheries) and have different undergraduate backgrounds (e.g., biology, chemistry, business, policy). The group delineates the problem, identifies stakeholders, and determines areas of necessary expertise. Students quickly realize they must strategize about which disciplines are most critical to address the problem.

After these preliminary steps, students complete two major assignments that incorporate both individual and group work. For the first assignment, each student researches one aspect of the problem and produces a technical report that explains and synthesizes key conclusions. For some students, writing the technical report is an ambitious and difficult assignment due to the specialized topic and source material. To maintain a cohesive focus on overall project goals, group members share annotated bibliographies and drafts of their technical reports for peer review. In addition to developing collaborative editing and feedback skills, this activity motivates individual research and writing. Because the technical report is the primary method of educating their colleagues, a topic that might once have seemed esoteric or narrow is now viewed as being critical to common understanding. The other students learn new theories and terminology through discussion and peer review. Each group makes a formal presentation to the class that introduces the problem and stakeholders, summarizes the key information from the technical reports, and offers preliminary solutions.

For the second major assignment, students co-author a proposal that integrates essential material from their technical papers and provides a conceptual framework and practical strategy for addressing their chosen problem. Although the primary audience is usually a relevant decision-maker, this proposal might also be aimed at key stakeholders or a broader community. Successful proposals move beyond "technical" solutions to consider public education and outreach, economic feasibility, and political will. To produce the final paper, some groups must work across substantial philosophical or personal differences to reach agreement on a common vision and plan. Such tensions often emerge in the question and answer session following a brief public presentation of their proposal.

At various points during the quarter, students read articles about interdisciplinary collaboration. For example, Lele and Norgaard (2005) address four barriers to interdisciplinary

work and identify implicit assumptions and value judgments that, if left unexamined, can undermine effective collaboration. Class discussions of such reading helps students realize that interdisciplinary work is inherently challenging and better equips them to deal with some of the tensions that arise in real time.

Rewards and challenges

Both student feedback and our own observations suggest that the project meets its objectives. Students report that it improves their understanding of critical content by having frank conversations about unfamiliar topics with peers who have developed expertise and are also approachable. For many, this is the first time that they have worked with others from different backgrounds, and they report that it has enhanced their eagerness and ability to work in an interdisciplinary collaborative setting. Further, they indicate that it broadens their perspective as they consider dimensions that they may not have previously recognized as being important. From our perspective, another factor in the project's success is that it involves both individual and group work, which alleviates student stress that arises when all assessment rests on group work.

Two challenges continue to inspire adjustments. First, due to the emphasis on the individual to develop disciplinary expertise, the project can sometimes seem multidisciplinary rather than closely integrated. Despite this potential flaw, we see the practical value—as a model for professional work—of this approach to integration (Lardner and Malnarich 2009). However, our students may be better served if we reduce the emphasis on identifying critical disciplines and instead encourage students to identify critical questions that need to be researched. This may help students target their research and think about the integration process earlier, as students could envision hypothetical answers to their questions in advance of doing their research and could map out how they would integrate this information to develop a solution.

Another challenge arises when integrating individual work to generate a solution. Some proposals seem like a patchwork effort, with a series of solutions raised by each discipline. We propose to have groups exchange proposals and conduct peer-reviews, assessing whether the proposal meets the elements of interdisciplinary work articulated by Mansilla and Duraising (2007). By providing a rubric with these expectations, more proposals are likely to become truly interdisciplinary.

Supporting thesis research within an interdisciplinary framework

The group project introduces students to the theory and practice of interdisciplinary collaboration in their first quarter of graduate study; the thesis project provides an opportunity to develop and demonstrate expertise during a student's final year. Students have affirmed both the "academic" and "professional" value of the 16-credit research thesis. In a recent survey of graduates, all respondents viewed the thesis as an important contribution to their intellectual development—indicating advances in areas such as critical thinking, data analysis, and writing—and professional development—with noted gains in specialized knowledge, technical skills, and collaboration.

Some thesis research integrates multiple disciplines to develop a novel insight. For example, many students use GIS to connect diverse environmental variables through spatial analysis. Keese (2014) assessed multifunctional landscape designs that attempt to conserve habitat while providing wind and solar energy. Sanderson (2013) investigated the causes of eutrophication in coastal waters by comparing land use patterns with stable nitrogen isotope levels in marine algae at nine sites in the Puget Sound.

However, many students complete novel and valuable research that arguably fits within traditional disciplines. For example, recent graduates have published their work on environmental education in prisons (Weber et al. 2015), pollinators in prairie restoration (Buckingham et al. 2016, Husby et al. 2015), and volunteer motivations in environmental organizations (Alender 2016).

Several pressures encourage disciplinary research. First, students recognize that many discrete research questions can, in fact, be answered through the lens of a single discipline. Second, students might want to improve disciplinary expertise or technical skills that will prepare them for specific positions after graduating, which they can develop and demonstrate through a narrow project. Finally, students—and faculty—are concerned about feasibility. To successfully complete original research, students must navigate the scholarship within *at least* one discipline, design a research question that responds to this scholarship, develop competence in *at least* one technique of data collection and analysis, and effectively communicate their research. Multiple disciplines and methods add complexity to each step in the research process.

Because thesis research with clear and narrow boundaries has pragmatic merits—timely completion of the degree and demonstration of specific expertise—we face a dilemma. Our program has strong interdisciplinary aspirations and structures. On the other hand, conceptual and practical pressures justifiably encourage students to pursue disciplinary research. Our response has been to experiment with various strategies that promote an interdisciplinary framework for all research questions, even those that narrow in the course of collecting and analyzing data.

One strategy is to encourage students to focus on case studies that have clear spatial and temporal boundaries. Research at a local scale often expands—organically—into multiple disciplines as students investigate the ecological

setting, political and economic dimensions, and cultural history of an environmental issue. At the same time, a local setting provides limits on research scope that differ from disciplinary boundaries. Garlesky (2015) examined a proposal to remove the Capitol Lake dam, which required extensive research into the geomorphology and ecology of the Deschutes River, the economic feasibility of different proposed projects, and political history of Olympia.

To help students develop research questions on local issues, we host a "thesis idea fair" where government agencies and regional NGOs share their most pressing research needs with students. A recent alumnus, Dennis Buckingham, developed this event because he found that students who work with organizations feel a motivational boost by having a tangible audience, real-world consequences, and invested mentors beyond academia. In the past few years, many students have collaborated with partner organizations, including Sustainability in Prisons Project (Weber et al. 2015), Center for Natural Lands Management (Husby et al. 2015), Joint Base Lewis McCord (Buckingham et al. 2016), Cascadia Research Collective (Beach 2016), Washington Department of Natural Resources (Ferguson 2015), and Taylor Shellfish (Lamb 2015).

Another strategy is to develop an interdisciplinary framework in the literature review. Students identify two or more disciplinary audiences that will be interested in the outcome of their research.[3] Krock (2016) examined how sowing time and site quality affect the success of 21 different species used for prairie restoration. While writing the literature review, she discovered that her study addressed practical questions about plant germination and survival (posed by restoration ecologists) *and* theoretical questions about the relative importance of priority effects and environmental conditions (posed by theoretical community ecologists). By addressing both audiences, her narrow research question cuts across disparate subdisciplines within ecology. Abdulghani (2014) researched shell dissolution in response to ocean acidification. When she found that this shell dissolution added base to seawater—potentially combatting localized ocean acidification—she wanted to know why oyster shells are sent to landfills rather than placed back into seawater. She compared policies on the east coast (where shells are currently redeposited) and west coast (where they are not) and proposed multiple reasons for these differences in policy.

A final strategy is to foster a strong community of students conducting research in different disciplines. Graduate education is often solitary or cloistered by discipline. We minimize these elements through deliberate curricular structures. In the second year, students take Case Studies and Thesis Design where they write a literature review and develop a prospectus. They review their colleagues' literature reviews and share their research via posters and presentations. Such activities foster substantive conversations about the diverse methods that scholars employ to answer environmental questions, as well as challenge students to communicate their work to audiences outside their disciplinary focus. Students meet periodically in thesis workshops during the next two quarters and present formal presentations of their research in the final weeks. These activities expose students to a wide spectrum of current research in environmental studies. They also make the thesis experience, which at times can be very solitary, a more communal enterprise.

Teaching across disciplines: modeling effective collaboration

Perhaps the most important thing for a faculty team to remember, individually and collectively, is that we are modeling—for better or for worse—interdisciplinary collaboration. Here are some things we have learned from the published literature and by being reflexive about our socialization as colleagues and humans.

Planning and meeting commitments

Team teaching requires commitment at each stage, from planning curriculum to evaluating students. Evergreen's model requires that faculty prepare for and attend each other's lectures, workshops, and labs. Faculty presence allows for dialog among faculty members that would not be possible if only one faculty came to each session. Moreover, it underscores the reality that interdisciplinary work can only succeed with the sustained participation of people from diverse backgrounds.

Two issues are worth special attention in the planning process. One is the representation of various disciplines. For faculty used to teaching on their own and having control over the syllabus, tensions can arise in collective decisions about how much time to devote to each discipline. Focusing on the learning objectives rather than the push and pull of disciplines or egos can sometimes ease those tensions. Another issue is workload. The planning process should include explicit discussions about who will be responsible for lectures on which days, who will lead seminars about which books, who will grade which assignments. At the end of the term, students will require an evaluation of their work. In some instances, one faculty member may grade all assignments for a given group of students. In other cases, faculty members may divide the grading responsibilities by assignment. In either case, faculty must communicate with each other about the rubrics for

[3] As a practical tip, we have found that general search engines (e.g., Google Scholar) have helped identify the relevant audiences by searching for publications across many disciplines.)

assigning certain grades, the thoroughness with which they provide feedback to students, and their own definitions of what constitutes excellent, competent, and deficient work. Commitment to consistency is crucial.

Navigating through interpersonal tensions and social inequities

When we enter a team-teaching setting, compromises and adjustments are inevitable. Emphasis on equity is important because, in our experience, course planning and classroom teaching can become stressful or unbalanced even when faculty have explicit agreements about commitments to shared workload. Students are quick to observe interpersonal tensions among faculty, which can erode the learning community. Moreover, team dynamics may reinforce power differentials by gender, seniority, race, personality traits, and employment status (e.g., adjunct vs. tenure-track vs. tenured). Teaching teams are, after all, comprised of human beings, and we do not live in a vacuum. We embody certain identities and the privileges associated with them, and these are always relative to those of our teaching partners. We carry these identities with us and they influence every aspect of our pedagogy: planning syllabus content, selecting case studies, developing assignments, evaluating student work, lecturing in the classroom, or responding to student questions.

In our experience, dominant personalities can potentially set the tone and agenda for the curriculum, with the other faculty providing their pieces to complete the jig-saw puzzle. Many factors—seniority, disciplinary identity, gender, race—can contribute to dominance in this process. In parenting, when there is an emphasis on presenting a united front for the children, one of the parents often sets the tone for the parenting and the other often compromises (Bollinger 2015). Teaching in teams is similar. When two or more people come together to teach, the corollary of presenting a united front is offering a coherent curriculum and consistent standards across the academic interests and pedagogical practices of the teaching partners. A process of negotiation and compromise ensues. When power imbalances exist, one faculty's agenda can dominate course design and pedagogy without deliberate scrutiny of the process and outcome. Without deliberate attention to such dynamics, curriculum planning and classroom teaching can veer away from a collaborative, democratic process.

Such inequities, to be addressed, must be rendered visible. They cannot be swept under the rug as uncomfortable or irrelevant. Team-teaching partners must develop a sense of interpersonal dynamics that may arise across differences, such as mansplaining in the context of gender (Solnit 2015), or racial micro-aggressions in the context of race (Gutiérrez y Muhs et al. 2012). Subtle practices of othering and invalidation are antithetical to the pursuit of collaborative and interdisciplinary teaching goals. We recommend that each weekly planning meeting include a check-in about specific ways in which we are challenging or reifying traditional power differentials in the classroom. For example, faculty teams might consider which member initiates discussions in the classroom about gender or racial inequities—*who* speaks about inequity often matters as much as *what* is spoken—to avoid mindlessly reenacting historical roles.

In addition, faculty teams should have explicit discussions about power differentials across both disciplines and epistemological approaches. In a traditional academic setting, course offerings created around distinct disciplinary approaches typically offer the solitary faculty member the power and privilege of teaching material that is taken for granted as valid by students in the program. In team-taught programs, that power is negotiated with teaching partners in complex ways. On the one hand, natural sciences and economics tend to dominate scholarly contributions to environmental policymaking. Many students—and faculty—view them as more epistemologically sound or methodologically rigorous, reflecting the common parlance of "hard" and "soft" sciences (Lele and Norgaard 2005). Such biases can be easily reified in curricular design and classroom teaching, unless they are recognized and addressed. On the other hand, post-positivist humanities or social sciences often adopt a critical stance toward the natural sciences and economics. Because this post-positivist work often problematizes the authority and supposed objectivity of the natural sciences and economics, colleagues in these disciplines can feel unfairly scrutinized or undermined in a team-teaching environment. As with social inequities, the best strategy is to discuss these tensions among the faculty team and make deliberate decisions, as a team, about how to address them—and make them visible—to students in the curriculum and classroom teaching.

Faculty members, above all, should cultivate a stance of public valuation of our colleagues and their disciplines when we discuss interdisciplinary connections. Our education in traditional disciplines brings a host of assumptions, biases, and modes of analysis that are communicated to students. Everything from the broad framing of lectures to the specific nuances of language conveys to students how much we value our own discipline. As a countervailing force, we recommend contemplating: Do we genuinely entertain a different disciplinary perspective than one we have been conditioned to believe is most important? Do we validate our colleagues' disciplines by highlighting the value of their contributions? Do we present our approach as one of many valid approaches? If meaningful interdisciplinarity is a conversation across disciplines (Toadvine 2011), then it is important that the discourse occur among partners who consider and treat each other as equals. We cannot expect our students to be supportive and respectful collaborators across disciplines if we do not exemplify this spirit in our own interactions.

Conclusion

The MES program adapted Evergreen's model of undergraduate education to create a robust model for graduate environmental studies. This approach emphasizes interdisciplinary team teaching, learning communities, and robust opportunities for independent student research and professional development. While we have drawn on our institutional roots for key structures and practices, we continue to evolve in response to current events, student interests, and employment trends. In recent years, we have enhanced the structures that support thesis work and expanded our courses in GIS/spatial analysis. Although we teach in a unique setting, we believe that colleagues in more traditional institutions interested in exploring collaborative teaching opportunities will be interested in our experiences and models. While we have outlined some clear strengths and strategies in meeting our key goals, we have noted challenging areas for further work. We hope, too, that articulating our current challenges will initiate conversations with others who are attempting to address the growing student interest in graduate interdisciplinary environmental and sustainability programs.

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