

While most of this volume is dedicated to describing the disciplinary content essential for educating environmentally literate citizens and to recommending promising pedagogical approaches for teaching that content, we begin with the seminar itself from which this book emerged as a model for grassroots, multi-disciplinary faculty inquiry (table part 1.1). Building on a foundation of existing interest and expertise at Indiana University, a multidisciplinary working group of faculty, staff, and students convened to develop a core strategy for promoting teaching and learning about environmental literacy campus-wide. What came to be known as the Environmental Literacy and Sustainability Initiative (ELSI) reached out to administrators, student groups, and operational units in an effort to develop an institutional framework for advancing environmental literacy and sustainability on campus (ELSI, <http://www.indiana.edu/~elsi/elsi.html>). Key elements of ELSI's two-year conversation are articulated in this edited volume. In addition, the ideas and cross-disciplinary relationships stemming from it laid important groundwork that a campus-wide sustainability task force appointed by the university vice president later could draw on. Members of ELSI were early

Table Part 1.1. A Model for Cultivating a Campus Conversation about Environmental Literacy and Sustainability

1. Building on foundations	• Who are the relevant content experts on campus and in the community? • What existing initiatives complement work on environmental literacy and sustainability?
2. Locating resources	• What internal grants (e.g., teaching, civic engagement, interdisciplinary) exist that could be applied to promote environmental literacy and sustainability? • What offices could provide support within their existing missions (e.g., teaching center, service-learning center, grant development)?
3. Designing the seminar	• What sorts of resources and areas of expertise should be represented in the discussions? • What does bringing together this particular group of people add to what we know? • What kind of format will both build knowledge among the participants and lead to actionable outcomes? • What does the group already know, and what gaps in knowledge should it seek to fill?
4. Gauging outcomes	• Are there opportunities to extend the discussion beyond the original participants? Are there opportunities that emerge serendipitously that will advance some of the seminar's goals? • Are there ways to share core findings and outcomes with related initiatives so that the key goals are carried forward?

advocates for such comprehensive approaches. And some were later tapped to serve on the vice president's task force, which recommended the institutionalization of several items also identified as desirable by ELSI, including the establishment of student campus greening projects; a position for full-time director of campus sustainability; involvement of operational units such as the residence halls, physical plant, and purchasing; and a sustainability advisory board. We offer here key components and lessons from our experience at fostering a sustained, multidisciplinary conversation with the hope that this model can be adopted and adapted at other educational institutions.

Building on Foundations

A major asset of colleges and universities rests in their highly accomplished faculty and staff, who are dedicated to educating students to be responsible contributors to society and who are often well aware of the interrelated environmental, social, and economic imperatives we face. Moreover, through professional and personal networks, they are often aware of existing institutional and local initiatives that can help build momentum toward a campus-wide environmental literacy effort. On the Bloomington campus of Indiana University, the Council for Environmental Stewardship (CFES) was formed in early 1998 as part of a campus-wide initiative to engage students, faculty, and staff in academic programs and administrative efforts designed to enhance campus environment and contribute to a healthy and sustainable world. In 2001, the CFES Environmental Literacy Working Group established that there was no mechanism for promoting environmental literacy as a basic competency across the entire spectrum of IU students. The CFES Environmental Literacy Working Group's focus thus became the development and promotion of such a vehicle for Indiana University. That group recognized the need for a broad-based conversation that would bring experts together to share what they knew. The working group also generated a broad conceptual outline of environmental literacy as an understanding of the ecological, social, and economic dimensions of human-environment interactions and the application of three broad content areas to everyday life: ecosystem services, ecological footprint, and sustainability. This framework guided the selection of seminar participants, the directives to them, and the format of the seminar conversations. Recognizing existing expertise meant that, even from the beginning, the seminar discussions drew from a strong multidisciplinary base, including experts on campus in the sciences, humanities, and social sciences who not only shared their expertise regarding the causes, impacts, and solutions relevant to being active participants in the "Century of the Environment" (Lubchenco 1998) but who were also already committed to and active in preparing students to make good decisions in times of great environmental challenges. For example, Professor

Diane Henshel led a master's-level capstone class in environmental science that evaluated the conditions and factors that contribute to the development of mold in buildings on campus. The students in this class interviewed administrators, faculty, staff, and students in order to make informed and sustainable recommendations for university-wide management of mold toxins (Henshel 2005). Developing the co-curriculum, Professor Heather Reynolds (Biology) worked with the University's Council for Environmental Stewardship to lead students to replant several large ornamental planters in a high-traffic region of the campus with native plants. They produced signs and pamphlets for the planter sites that educated readers about the environmental impacts of landscaping practices. This project provided an exemplar of using the physical campus as a pedagogical tool. As a third example of building on existing faculty foundations, Paul Schneller, the Physical Plant Coordinator of Development and an adjunct faculty member in the university's School of Public and Environmental Affairs, developed a new Green Internship program. This program placed student interns with the Physical Plant; the University Architects Office; Purchasing; and the Office of Environmental, Health, and Safety Management to work on semester-long sustainability-related projects for course credit.

Locating Resources

Although not many resources are necessary to invite dedicated people into discussion about issues that they are committed to, a greater degree of coordination means a greater likelihood for impact, and such coordination often does benefit from additional resources. For example, local curricular grants may exist that can be used to support development of environmental literacy and sustainability programs. By 2002, the CFES's Environmental Literacy Working Group discussions had gained enough momentum to successfully apply for internal funding from the Office of Academic Affairs and Dean of Faculties Multidisciplinary Ventures and Seminars Fund for a series of meetings that would produce an edited volume of proceedings (Reynolds and Brondizio 2002).

The original proposal was for a faculty seminar titled "Cultivating Freshman Environmental Literacy—A Faculty Seminar" to last one academic year, fall/spring 2003–2004. Ironically, while the funded proposal described a year-long seminar, the conveners were worried that such an extended time frame would cause the discussions to lose momentum, and so shortened the seminar to one fall semester only. Very quickly, however, it became apparent that the conversations would be sufficiently rich to extend into spring 2004 and again into the following year when participants did concerted outreach to administrators, operations staff, and student groups and developed a proposal for institutionalization.

The original proposal to the internal grant program outlined the rationale and

timeliness for the subject of the seminar, situating higher education in a position crucial to the goal of environmental sustainability. It highlighted the position of colleges and universities, as centers of enlightenment and learning, to contribute to the global discussion by producing graduates who possess the information, skills, and civic ethic to help our complex, global society move toward economics that operate within the regenerative and assimilative capacities of the earth system. Through readings, invited lectures, discussion, and synthesis, the seminar was proposed to explore the twin concepts of global environmental change and sustainability, their ecological, sociopolitical, and economic underpinnings, and the most appropriate format by which to draw these elements of environmental literacy into an interdisciplinary learning experience. The immediate outcome was intended to be a plan detailing the content and format of a lecture- or web-based course or other vehicle (e.g., orientation packet, video) capable of reaching a significant portion of the freshman population. The seminar participants would also produce edited proceedings to document their work. This project also proposed to forge interdisciplinary collaborations among faculty and students, create a model for other institutions to follow, and foster an ethic of stewardship and civic responsibility in generations of students to come.

The original proposal made the case for this particular university's participation in the conversation given the reference points of peer institutions. It placed the proposed seminar in the context of related activities in the Big Ten, PAC-10, ACC, Ivy League, and other university and college systems. It also reviewed the findings of a survey of U.S. higher education institutions conducted by the National Wildlife Federation's Campus Ecology Project. Although it acknowledged a wealth of relevant courses at nearly every university, including Indiana University, it identified an important gap: most institutions lack both a mechanism for advancing environmental literacy across a broad spectrum of the student population and a mechanism for launching discussions about an informed and intentional environmental literacy program. Indiana University's Bloomington campus thus had the opportunity to take on its own shortfalls in coordinating efforts toward environmental literacy while developing a model for other institutions.

The proposal resulted in a \$5,000 award from the Multidisciplinary Ventures and Seminars Fund, which in turn opened the door for additional successful funding proposals to the University's College Arts and Humanities Institute, the CFEs, the Scholarship of Teaching and Learning Program, the School for Public and Environmental Affairs, the College of Arts and Sciences, and the campus teaching center. The supplemental funds they provided covered the costs of honoraria for speakers, travel expenses, office/clerical supplies, salary for a teaching assistant, publication costs, and an educational consultant.

Involving People

The original proposal was itself a collaboration by two professors that built on existing foundations. Heather Reynolds, then Assistant Professor of Biology, was serving at that time as chair of the University's Council for Environmental Stewardship and a member of the CFEs's Environmental Literacy Working Group. Eduardo S. Brondizio, then Assistant Professor of Anthropology, was serving as Assistant Director of the Anthropological Center for Training and Research on Global Environmental Change. Another key member of the organizing group was Briana Gross, then a graduate student in biology and the leader of the CFEs's Environmental Literacy Working Group. These organizers attained support from approximately thirty faculty and administrators from units on campus as diverse as the Schools of Law, Public and Environmental Affairs, and Journalism, and the Departments of Anthropology, English, Biology, History and Philosophy of Science, Religious Studies, Political Science, and Physics.

While the initial grant proposal had proposed a faculty discussion focused on freshman, the initiative quickly expanded to embrace all students and indeed all campus personnel. As a result, staff and graduate students and undergraduate leaders of student groups were invited into the conversation. The campus teaching center provided space in its Scholarship of Teaching and Learning presentation series for keynote seminar speakers to reach a broader spectrum of the university. Doug Karpa, an instructional consultant from that office, joined the core seminar team as a pedagogy expert. The teaching center co-funded two keynote speakers, David Orr (Oberlin) and Christopher Uhl (Penn State), who visited to address the seminar and the campus.

The project funded a half-time (twenty hours per week) graduate student with joint interests in education and human-environment interactions to facilitate key activities and outcomes. The responsibilities of the graduate student included the following:

- Developing web pages on the Council for Environmental Stewardship's website to serve as a locus of information, including the seminar's mission, schedule of events, questions from the month's presenter(s), session minutes (including breakout summaries), and related links;
- Attending each seminar session to participate in discussion and to take notes from which to prepare minutes summarizing the session's main ideas;
- Posting readings, presenter questions, and monthly minutes on the

- website, and emailing reminders of upcoming meetings to seminar participants; and
- Assisting with room reservations and refreshment orders.

The seminar series was successful in terms of both the number and diversity of participants (approximately thirty faculty members in attendance from more than fifteen different Indiana University schools and departments), the consistency of attendance, and the level of enthusiasm (Environmental Literacy Seminar Minutes 2003). At the conclusion of the series, the participants decided to remain committed to it for an additional two semesters.

Designing the Seminar

The most significant challenge in advance of launching the seminar was to design its sessions so that experts from diverse disciplines would remain interested in the core project, sustaining them to produce ambitious but practical recommendations for making a significant impact on student learning and campus practices. The most important orientation in the design was the experiential and creative capacity of the seminar participants, and the key mode was *inquiry*. Acknowledging the complex and interdisciplinary nature of the interrelated social, economic, and environmental challenges of twenty-first-century society, the seminar focused on two questions: What should an environmentally literate person know? and, What teaching and learning strategies are most effective in promoting that knowledge campus-wide? The core format of the seminar was designed to leverage local experts to take up that inquiry in ways that would create locally viable educational solutions.

The seminar meetings were both voluntary and meant to be cumulative. Each ninety-minute session was organized over a light lunch of sandwiches from the local food cooperative, which helped to ensure a broad and inclusive participation (everyone needs to eat lunch!).

Each of the first seven meetings began with an expert speaker or roundtable presentation. The presenters were asked to do three things: recommend a background reading to focus participants on key concepts and issues for the session at hand; submit a short essay identifying key aspects of environmental literacy motivated by their area of expertise, including applications to everyday life choices; and create a five-minute presentation encapsulating their environmental literacy recommendations. Readings were posted on the web two weeks before each session to facilitate advanced preparation.

After the speaker or roundtable presentation, the instructional consultant

facilitated a breakout session, in which participants broke into groups of approximately five to address the guiding seminar questions: Given all we have heard so far, what should all students know about this topic in order to be considered environmentally literate? And, what teaching and learning strategy would foster this knowledge?

The breakout groups allowed participants to discuss and develop environmental literacy recommendations on the session's topic. Their notes were written on flipchart paper, which allowed them to be captured by the seminar coordinators and shared with the reconvened seminar participants toward the end of each session. The graduate student project assistant posted the breakout summaries regularly on the web. This reporting activity insured that ideas were documented for use as the seminar progressed and available for compiling for various reporting purposes.

The semester's meetings were divided into two sections—content and pedagogy; each preceded with a Scholarship of Teaching and Learning program keynote speaker publicized to a campus-wide audience. David Orr (Oberlin College) kicked off the content section with a presentation focused on the rationale for environmental literacy, titled "Environmental Stewardship and Sustainability for the 21st Century: The Role of Education." The topics of the content section included Population and Environment (Emilio Moran, Ben Brabson, Sue Grimmond), Environmental Toxins and Biotechnology (Diane Henshel, Roger Hangarter), Institutions and Policy (Elinor Ostrom), Ecological Economics (Christine Glaser, of St. Mary of the Woods College), Sense of Place (Scott Sanders), Environmental Justice (John Applegate), and Religious World Views (David Haberman).

Christopher Uhl (Penn State) introduced the pedagogy section with a presentation titled "Teaching and Practices to Awaken Ecological Consciousness." The pedagogy-focused topics included three roundtable sessions. Experiential Learning Roundtables focused on the Indiana Environment (Keith Clay, Victoria Meretsky) and on Active Learning in the Large Lecture Model (Craig Nelson), Service-learning (Claire King), and Place-based Learning through the Five Senses (Matt Auer). An Educational Media Roundtable focused on web, video, and campus orientation formats (Jim Capshaw, Jeanne Sept, and Ralph Zuzolo).

The first year's meetings concluded with the leadership team (Heather Reynolds, Eduardo Brondizio, Doug Karpa, and Briana Gross) presenting a report that offered a synthesis of the year's discussions for comments by the participants.

Gauging Success

The seminar had multiple outcomes and ripple effects that continue to suggest a high degree of impact. One of the significant indicators was that the seminar

remained responsive to the input of participants while maintaining the facilitation structures designed by the leadership team. In particular, interest was so great that the series was extended for two additional semesters, with high attendance throughout. During the second semester, the participants developed the work of the first semester into a core strategy for promoting environmental literacy and sustainability on the Bloomington campus of Indiana University, "A Pedagogical Approach to Greening IU" (appendix). The core strategy recommended creating a multi- and interdisciplinary environmental literacy initiative through service-learning and other experiential teaching and learning opportunities that would serve to "green" the Bloomington campus, thus integrating the "shadow curriculum" of the campus environment with the traditional academic curriculum. The core strategy was presented to the campus's most senior academic officer, Chancellor Kenneth R. R. Gros Louis. Based on the encouragement of the chancellor and the commitment of the participants, the seminar was extended for a third semester. During this final semester, the seminar participants invited additional campus staff and student representatives into their discussions to explore the potential for implementing this core strategy.

The number of partnerships that the seminar established indicates a great degree of relevance in the way it was framing issues. For example, the formal outgrowth of the Environmental Literacy and Sustainability Initiative from the now-defunct Council for Environmental Sustainability suggests that faculty recognized the potential in bringing ELSI's pedagogical goals together with CFE's broader membership and mission. In addition, the third, more informal semester of the seminar focused mainly on building coalitions with students and staff on campus, including with student government, the residence halls, purchasing, and the physical plant.

In an additional outcome, the seminar participants realized that their discussions could serve as a model process for reaching across disciplines toward a common goal of environmental literacy and sustainability. Work on the present edited volume proceeded apace. A few additional chapter authors were solicited in order to fill in disciplinary coverage. In further discussions, the seminar leadership team clarified the audience for the book, deciding to speak primarily to a broad range of university educators who may also be grappling with environmental literacy and sustainability issues.

The seminar participants also realized that their goals would be most effectively accomplished through a more robust institutional structure in support of environmental literacy and sustainability. A working group was designated at the end of the third semester to develop recommendations for an institutional structure for an Environmental Literacy and Sustainability Initiative on the Indiana University Bloomington campus, aimed at implementing the core pedagogical strategy developed earlier. The proposal to the administration recommended

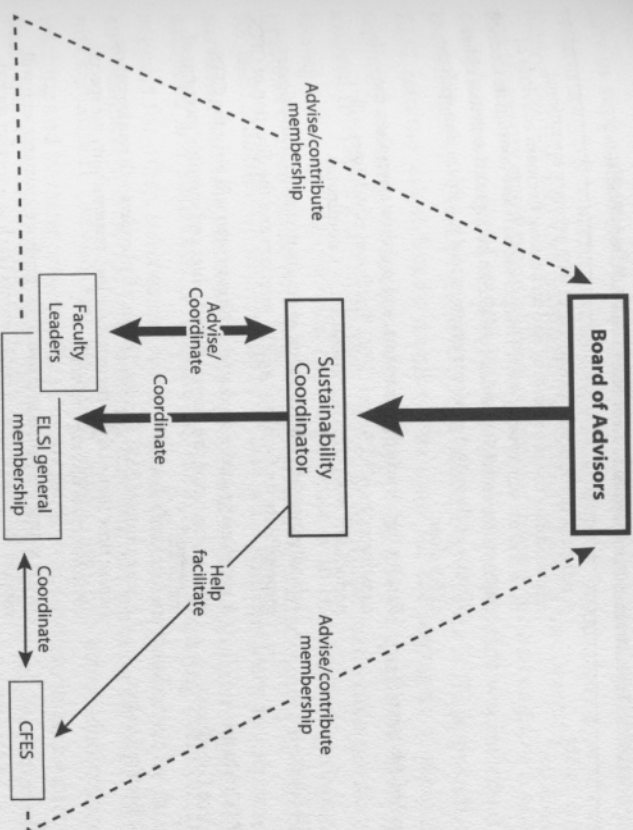


FIGURE PART 1.1. Proposed institutional structure in support of campus environmental literacy and sustainability.

adding a full-time sustainability coordinator position to the campus staff, one that would build and coordinate campus environmental literacy and sustainability activities (figure part 1.1, table part 1.2).

In a separate but related initiative in 2006, members of ELSI joined other faculty, staff, and students in petitioning the university provost to establish a campus-wide task force on sustainability. In 2007, the university's vice president announced the formation of an Indiana University Task Force on Campus Sustainability, the membership of which drew significantly from faculty and staff involved in the Environmental Literacy and Sustainability Initiative. Drawing on the reports and findings of ELSI as a component of its own extensive research, the more than one-hundred-person task force recommended designating a new campus sustainability coordinator, establishing an internship program and other activities directly involving students, and creating a website (<http://www.indiana.edu/~sustain>). Moreover, in fall 2008, the Dean of the Faculties initiated two new internal grant competitions to support the development of the teaching of sustainability. The \$8,000 Sustainability Course Development Fellowships are designed to support "innovative approaches to instruction of complex, interdisciplinary topics at both undergraduate and graduate levels of instruction.

Table Part 1.2. Proposed ELSI Leadership and Advisory Bodies

Sustainability Coordinator	A full-time professional staff member with primary operational responsibility for coordinating and facilitating the main activities of ELSI and for supervising staff. This person will also coordinate Council for Environmental Stewardship (CFES) meetings and activities either directly or through a graduate assistant and in conjunction with the CFES chair.
Board of Advisors	Faculty, high level administrators, and representatives from the constituencies of ELSI and CFES. The Board of Advisors will periodically meet with the Sustainability Coordinator.
CFES Chair	A faculty member, staff member, or graduate student with primary responsibility for facilitating CFES meetings and the direction of CFES.
CFES Graduate Student Coordinator	A part-time graduate student coordinator who will assist the CFES chair in managing the day-to-day activities and monthly meetings of the CFES.
ELSI Faculty Leaders	A core group of ELSI faculty. The Faculty Leaders will receive course release time that enables them to take lead responsibility for specific environmental literacy projects.
Staff	Two graduate assistants and two undergraduate assistants who will support the production of public events (such as a speaker series), facilitate tasks associated with the greening projects, and support grant and report writing.

Service-learning courses and those that involve application of principles of sustainability to the IU Bloomington campus are of particular interest" (<http://www.indiana.edu/~sustain>). The \$30,000 Indiana University Sustainability and Transdisciplinary team "proposing a new teaching and learning initiative that promises to have a sustained impact upon sustainability research and education and that could serve as a model for the development of academic programs with sustainability-related themes on the [Indiana University Bloomington] campus" (<http://www.indiana.edu/~sustain>).

Conclusions and Connections

The notion of a "campus conversation" that is based on inquiry and designed to align teaching goals and methods with learning objectives emerged in the 1990s in the context of scholarship of teaching and learning initiatives spearheaded by the Carnegie Foundation for the Advancement of Teaching. At Indiana University, a Scholarship of Teaching and Learning (SOTL) program was established under the auspices of the Dean of the Faculties as an interdisciplinary commu-

nity in support of faculty inquiry into undergraduate learning (Robinson and Nelson 2003). Advocating a scholarly, visible, inquiry-based stance toward establishing context-sensitive relationships between teaching and learning, the Indiana University environmental literacy seminar became the first sustained, multidisciplinary example of topic-specific inquiry on campus that was informed by the scholarship of teaching and learning. In keeping with the SOTL approach, the ELSI seminar asked faculty members to draw on the strengths of their disciplinary training—including their ability to ask precise questions, their specialized reserve of knowledge, their facility in particular methodologies for collecting and analyzing evidence, their experience with the signature pedagogical practices of their fields, and their understanding of diverse career opportunities for their students—to understand how and what students learn in response to particular teaching methods (Boyer 1990; Hutchings and Shulman 1999). Highly sustained and successful, it became an exemplar in garnering administrative support for other, subsequent inquiry-based discussions conducted by faculty and designed to close the loop between teaching and learning on issues of significant import (Nelson and Robinson 2006). And like other scholarship of teaching and learning projects, the seminar itself, in addition to its recommendations specific to environmental literacy and sustainability, can be considered a model worth testing and extending to other contexts so as to build viable change initiatives.

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PART TWO

CORE LEARNING GOALS FOR CAMPUS-WIDE ENVIRONMENTAL LITERACY

19

Briana L. Gross

Many colleges and universities have some type of organization dedicated to environmental issues such as stewardship, sustainability, or the catchall focus of "greening." Such campus greening or sustainability initiatives can face a catch-22. To be successful, greening initiatives require both grassroots support from the student body and top down support from high-level campus administrators. Yet each type of support can be difficult to attain without the other. On one hand, high-level administrators might stipulate that broad support for environmental stewardship must be shown before any changes are implemented. Similarly, campus departments that are designed to serve student needs will not provide environmentally friendly alternatives until there is sufficient student demand. However, even if moderate support for environmental stewardship is shown, it may be difficult to elicit further interest without the assistance of administration and support staff. Many institutions thus struggle with the question of whether changes in environmental policy should come from the top down or the bottom up. There is no easy answer to this question, of course—

forcing change from the top down can result in resistance, but waiting for an environmental movement to occur in the absence of any information or encouragement is a difficult prospect. Even when individuals in every sector of the university would like to see a green campus, as is frequently the case, the prospect of any one department striking out on the road toward this goal can be daunting. In this essay, I detail how collaborative projects can successfully bridge the top/bottom divide faced on many campuses and also promote environmental literacy in the undergraduate student body.

One specific example of how environmental literacy and sustainability can be initiated in a way that combines elements of top down and bottom up efforts comes from Indiana University Bloomington. The organizations responsible for campus sustainability at IUB have gone through several incarnations, something that is probably not uncommon for an institution of higher education. Efforts mainly began with the formation of the Council for Environmental Stewardship (CFES), which was made up of representatives from staff, student, and faculty groups from across the IUB campus, and was created with the goal of moving the university toward sustainability through academic, operational, and administrative efforts. The CFES took the approach of creating working groups centered on topics of interest or importance to the IUB campus. Among the many projects completed between the CFES's inception in 1998 and its disbandment (due to budget cuts) in 2006, one of the most successful and well liked was the Prairie in the Planters project. Initiated by the CFES's Green Landscaping working group, this project effectively brought together a number of campus and community groups.

The Prairie in the Planters project was organized by a Biology Department faculty member who was leading the Green Landscaping working group and a graduate student from the School of Public and Environmental Affairs, whose work on the project contributed to her master's degree in environmental policy and natural resources management. The project involved using native plants to beautify several large planters in a high-traffic region of the campus, creating examples of the native prairie that once dominated parts of Indiana. Implementing this project depended on input from the architect's office, help with tools, mulch, and other supplies from the landscaping division, greenhouse space and supplies from the Biology Department, and volunteer efforts by students, staff, faculty, and Bloomington community members associated with an initiative to register the city as a National Wildlife Federation Community Wildlife Habitat (<http://www.nwf.org/community/>). Funding for plants was provided by the CFES and a National Wildlife Federation Campus Ecology fellowship awarded to the graduate student. The project was complemented with permanent signage at the planter site and pamphlets describing the benefits of environmentally friendly landscaping practices and tips for implementing native land-

scaping on campus. The integration of efforts by faculty, graduate and undergraduate students, support staff, and Bloomington citizens extended the breadth of the project across the campus and to the community. The use of signs and pamphlets, as well as the striking visual presence of the native plants, made the planters a prominent feature on the campus, helping to raise ecological consciousness and promote a sense of place in students. In general, the project is an excellent example of using the physical campus as a pedagogical tool.

Elements of Success

There are many features of the Prairie in the Planters project that contributed to its success. From a purely practical perspective, the explicit goals and relatively modest size of the project allowed it to be completed in only about a year. The clearly circumscribed nature of the plan made seeking assistance from other departments on campus less daunting for both the organizers and the potential donors. While it might at first be considered restrictive to limit the scope of environmental projects, it is likely that many small successes will have a more positive impact on a given campus than any project left half-completed. Note also that the size of the project is appropriate for undergraduate participation; i.e., it could have been integrated into a course and completed by a group of students over the span of a semester or a year. Although this project was undertaken outside of a formal course structure, it represents an excellent example of how one might integrate pedagogy and greening to promote both environmental stewardship and environmental literacy.

Another important element contributing to the success of the project was the fact that it provided a mechanism to institute campus greening and promote environmental literacy that was appealing to *all* the members of the campus community. Although the project involved students, faculty, administration, and staff, no single group was required to take on the entire burden of the project. Thus, the campus administration and staff supported a greening effort (top down) organized by students and faculty (bottom up). This project sidestepped the major roadblocks usually involved in greening efforts by virtue of its cooperative nature; change was not forced on the campus by the administration or operations, and the individuals organizing the project were not required to complete it in the absence of a support network. Perhaps most importantly, the project revealed the common ground that is shared by many members of the campus community, but is rarely explored. The project allowed the CFES to meet goals of promoting environmental awareness and stewardship on campus, contributed to the degree work for a master's student, and assisted a community group in their work to promote natural landscaping citywide. Furthermore, the campus architect's office and landscaping division were happy to promote a

grounds project that fostered student ownership and pride in the campus landscape. When students' attitudes toward the campus grounds change in this way, the goals of maintaining and improving the grounds become easier. The enthusiastic public response to the planters by passers-by (staff, student, faculty, and community) bodes well for the future of campus greening projects.

Transfer of Ideas

The Prairie in the Planters project cannot be considered extraordinary in comparison to green landscaping or habitat restoration projects that are being implemented on campuses across the United States (e.g., the National Wildlife Federation Campus Ecology program, described at www.nwf.org/campusecology). Nonetheless, it serves as a useful illustration of two major issues surrounding environmental literacy and sustainability.

The first issue returns to my focus at the beginning of this essay. Although an increasing number of institutions are making sustainability a priority and even hiring people in the position of sustainability/environmental coordinator, there are still many places where this is not high on the list of priorities. What if you are an individual who is not lucky enough to be at an institution with a commitment to sustainability? In that case, you might be facing the catch-22 of trying to show, simultaneously, that there is sufficient enthusiasm for environmental stewardship from the administration, the staff, and the students before any real institutional support has materialized. In this situation, even a modest project that integrates contributions from multiple groups can make a convincing case that such an attitude actually exists. Indeed, projects like the Prairie in the Planters doubtless helped to generate momentum for a well-supported Task Force on Campus Sustainability, with areas of focus that include environmental restoration and environmental literacy.

The second deals with the use of "place as pedagogy" for promoting environmental literacy in both an unstructured and a structured manner. The way a campus is maintained and presented to students will influence their understanding of the importance of sustainability, even when it is not presented in a formal manner. What is communicated to a population of thousands of undergraduates when environmentally harmful practices, such as the use of chemical fertilizers and pesticides, are used to create a "beautiful" campus? How can they develop an appropriate sense of place at a university when most of the plants are exotics that would never survive in that location without human assistance?

More formally, campus greening projects present rich active learning opportunities that can be integrated into course syllabi as service-learning. Basic service to plant or maintain restored, natural landscapes could be appropriate for almost any course (although, ironically, these areas will actually need less care

than traditional landscaping areas). At a more complex level, a comparison between traditional landscaping practices and green landscaping practices might serve as an explicit focus for discussions dealing with such aspects of the human ecological footprint as chemical and land use policies. The positive side of this discussion, of course, would deal with the role of the natural landscape in terms of ecosystem services and our ability to restore them as a part of a commitment to sustainability.

The power of place as a pedagogical instrument cannot be underestimated; that is, once the campus is green, it can serve as a constant reinforcement of the importance of environmental stewardship. Thus, the pedagogical approach to greening a campus proposed in this book is a logical plan of action, and many campus environmental groups might benefit from approaching education and greening simultaneously. Producing environmentally literate graduates clearly has important implications for the future of the environment and society at large. Happily, introducing a program of environmental literacy will likely also have an impact on the campus where students are trained. An environmentally literate student body would be more likely to support campus greening, providing steady reinforcement for cooperative efforts once the initiative is underway.

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Food for Thought

A Multidisciplinary Faculty Grassroots Initiative for Sustainability and Service-Learning

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Thinking collectively at the crossroads of disciplines is difficult intellectual work that is essential if higher education is going to be able to turn out students who can address the interrelated environmental, social, and economic challenges of twenty-first-century society. Our ability to bring to the forefront new knowledge exceeds the capability of the human mind to retain this factual information. This mandates that meaningful connections be made visible and that education be not merely about the transmission of factual knowledge, but rather about fostering ways of knowing and habits of mind that will continually renew our intellectual resources and provide innovative ways for approaching the complex problems facing humanity.

A challenge for faculty thus lies in developing new models of teaching and learning that prepare students to work within uncertain intellectual boundaries

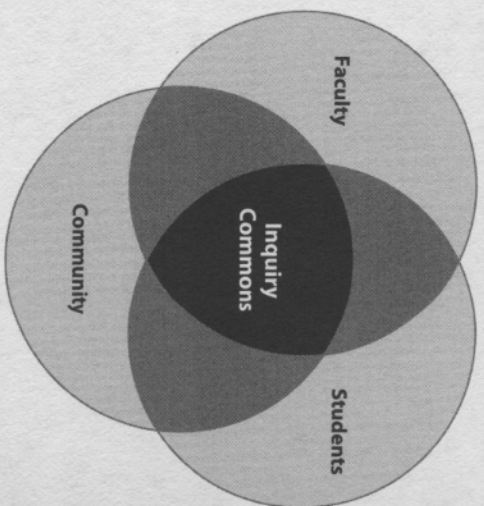


FIGURE 17.1. Our inquiry commons: multidisciplinary service-learning with a common theme.

and to connect existing knowledge to complex problems; to recognize the multitude of disciplines necessary to work toward solutions to these problems; and to understand diversity and advocate for social justice and change. Learning communities have been shown to support student and faculty work at disciplinary crossroads. Service-learning has been demonstrated to engage students and faculty in ways that allow them to think more critically and deeply within their disciplines and foster understanding of the connections between disciplines that can then facilitate the application of knowledge to solve real world problems. The Food for Thought (FFT) Project developed and tested a novel model of multi-course and multi-partner service-learning as a means of increasing student interdisciplinary understanding and civic engagement. Our model operates very much within the framework of the *Teaching Commons*, where faculty, students, and community come together to engage in experiential learning, dialogue, and reflection (Huber and Hutchings 2005). Organized around a central theme and a common set of community partners, with built-in support mechanisms for cross-disciplinary sharing and collaboration, we define this special type of learning community as an "inquiry commons" (figure 17.1).

Opportunity for Change

Change occurs through opportunity, and in early 2006 two interdisciplinary initiatives on the Indiana University Bloomington campus, Human Biology (HUBI) and the Environmental Literacy and Sustainability Initiative (ELSI),

merged their collective expertise to put forth a successful project proposal for the Dean of the Faculties Scholarship of Teaching and Learning Leadership Award. The project sought to provide a transformative and transdisciplinary learning experience for students, one that would foster their cognitive, social, ethical, cultural, and global identities. The experience of the ELSI team with environmental literacy and service-learning, coupled with the experience of the HUBI team with the development of learning communities, interdisciplinary curricula, and tools for documenting and supporting integrative teaching and student learning, provided for a strong collaboration. The three broad goals for the FFT project included: (1) to develop and test a novel model of cross-disciplinary service learning as one approach to fostering student interdisciplinary understanding, intellectual and personal development, and civic engagement, (2) to develop and implement new and integrative models for assessing student learning and for finding ways to make visible the connections between teaching and learning, and (3) to provide a model for learning communities consistent with that of a teaching commons as described by Huber and Hutchings (2005).

Both HUBI and ELSI had experience pioneering distinctive learning experiences that were grounded in the theoretical frameworks and assessment of student learning set forth by Perry (1970), Kegan (1994), Belenky et al. (1986), King and Kitchener (1994), Chickering and Reisser (1993), Piaget (1970), Magolda (1999), and Magolda and King (2004). Both HUBI and ELSI embraced and employed holistic and integrative approaches to teaching and learning. These approaches aim to foster cognitive maturity, integrated and ethical identity, and mature relationships that enable effective citizenship and are consistent with those championed in *Greater Expectations: A New Vision for Learning as a Nation Goes to College* and most recently in the LEAP Report (National Leadership Council for Liberal Education and America's Promise report; Association of American Colleges and Universities 2002 and 2007, respectively).

Learning Communities

The collaboration of learning communities with a shared purpose has been shown to facilitate institutional change (Cox and Richlin 2004). Furthermore, faculty learning communities create connections for isolated teachers, establish networks for those pursuing pedagogical issues, meet early-career faculty expectations for community, foster multidisciplinary curricula, and encourage community in higher education.

Early leaders of learning communities in higher education include Alexander Meiklejohn (1932), John Dewey (1938), and Joseph Tussman (1969). Meiklejohn, who instituted the Experimental College at the University of Wisconsin in 1927, wrote of the importance of curricular structures, coherence, and community

with a sense of shared values in addressing the fragmentation of the learning experience and environment in higher education. Meiklejohn and Dewey shared a vision for teaching, learning, and community that is perhaps captured best by Mervyn Cadwallader, an early dean at Evergreen State College, an institutional model for integrated studies and learning communities. He writes, "Meiklejohn and Dewey arrived at the same terminus: the need to provide education for citizenship, a curriculum of political morality, and a call to teachers to be endlessly experimental rather than doctrinaire (Cadwallader 1984: 286)."

The organic process that our FFT learning community employed is rooted in Tussman's learning community experience at Berkeley, "A dominating idea must come first. The curriculum must grow out of a simple idea and be developed by a group committed to the idea" (1969: 52–53). Interdisciplinary learning communities support faculty and students in ways that allow for forward thinking about the design of assessment tools and research studies (Lynch-Balta et al. 2006). Central to the FFT learning community was inquiry, asking questions about student learning, collecting evidence of student learning, sharing this evidence and building upon the work of others with the purpose of transforming the practice of teaching in higher education. For there to be an understanding of what an environmentally literate person looks like, and how teaching and learning align with this curricular goal, there needs to be a teaching commons that has at its core the scholarship of teaching and learning: a community that is asking questions about student learning and teaching practice and examining the evidence, making this work public, and building upon the work of others in ways that allow for teaching as a scholarly endeavor.

The questions that provided the foundation for the FFT learning community innovation and inquiry were: How do interdisciplinary teams of students and faculty work together with multiple community partners to enhance student learning and civic engagement? How can such a complex teaching process be documented? How do you capture evidence of student learning in this community-focused learning environment?

The Model

An emergent vision and creative process is at the core of transformative and sustainable innovation and change. Our vision was that of an inquiry commons, a novel curricular model comprising multiple service-learning courses across a range of disciplines, organized around a central theme and a common set of community partners. With help from Campus Instructional Consulting and the Office of Service-Learning, blending two independent faculty learning communities, ELSI and HUBI, offered the necessary coherence, support, and sense of common purpose to undertake the implementation of this inquiry com-

Table 17.1. Faculty, Courses, and Community Partners

Faculty/Discipline	Course	Community Partners
Victoria Getty Applied Health Science	Issues in Dietetics HPER-N401	Indiana University SPROUTS (Students Growing Organics Under the Sun)
Diane Henshel Environmental Science and Policy	Risk Communication SPEA-E412/512	Indiana University Hilltop Garden and Nature Center Mother Hubbard's Cupboard
James Reidhaar Studio Art	Graphic Design Studio COLL-S452	
Heather Reynolds Biology	The City as Ecosystem COLL-E105	

mons. An Office of Service-Learning Advocate for Community Engagement (ACE) and a graduate student assistant provided additional logistical support to the FFT project. ACEs are undergraduate students who act as a liaison between community-based organizations, instructors, and service-learners.

The courses taught involved a range of disciplines (environmental science and policy; nutrition; biology; and graphic design) and students (freshmen to graduates, non-majors and majors), and the community partners included a food pantry, a student organic garden group, and a garden and nature center (table 17.1). Two key elements of our model were a central organizing theme and the collaboration of multi-class teams of students on service-learning projects related to this theme.

We chose food literacy as a model interdisciplinary theme. As an important element of environmental literacy, food literacy cuts across critical social, economic, and environmental issues at local to global scales, providing ready access points for a wide variety of disciplines and student backgrounds. Early in the planning process, faculty and community partners came together to develop a common understanding of food literacy. Using affinity mapping of concepts, the group defined food literacy as the understanding and motivation to act on the interrelated social, economic, and ecological dimensions of food production, distribution, preparation, consumption, and waste management, recognizing the roles of individuals, communities, and societies at local to global scales. Developing this common understanding of food literacy was an essential first step in identifying common interdisciplinary ground among faculty and insuring consistency in learning goals across courses.

Service-learning is a form of experiential learning that when coupled with reflection allows for students to connect the classroom with life experience in ways that develop higher-order thinking and empowers them with a sense of identity, place, and connectedness in the world (Kolb 1983). To accommodate

the hundred or so students involved, faculty and community partners developed twenty-five service-learning projects that drew on the common and unique expertise and skills available in each class. Examples of service-learning projects include development and marketing of food- and agriculture-related lesson plans, development of plans for food waste composting and community outreach, and development and administration of patron surveys.

Other teaching and learning tools included two hours of direct service to a community partner, group and electronic reflection sessions, and student electronic portfolios (e-portfolios). The e-portfolio, derived individually and linked to others, is one tool that allows for the complex nature of the learning outcomes such as those sought in HUBI and ELSI to be revealed by students and linked with faculty pedagogical intention and reflection (Yancey 2001). Electronic portfolios are a central form of assessment for HUBI, and it has integrated a longitudinal e-portfolio into its undergraduate degree program using the Carnegie Foundation for the Advancement of Teaching and Learning (CASTL), Knowledge Media Lab (KML), KEEP (Knowledge, Exchange, Exhibition, and Presentation) Toolkit (<http://www.cfkeep.org>). The very process of generating a portfolio allows for students and faculty to "go meta" and in doing so facilitates deeper understanding of learning. The Peer Review of Teaching Project, building upon earlier work (Hutchings 1998), led the way for the scholarly faculty course e-portfolio. We employed individual faculty e-portfolios as well as an overall project e-portfolio in the FFT project.

Emerging Outcomes

Student, faculty, and project e-portfolios offered a framework for collecting and evaluating evidence of student learning and other data sources that were central to our inquiry. The faculty course portfolios were a place for reflection on individual courses and analysis of student e-portfolio work, while the project portfolio provided for documentation and analysis of the multidisciplinary service-learning project model (table 17.2). Results indicate that the model was supportive of student learning across a range of class levels and disciplines. The model facilitated student understanding of the community and connected their learning to genuine concerns within the community in a manner that promoted civic engagement. This model also helped students recognize and value the multiple perspectives and expertise necessary to solve authentic problems and complete multifaceted projects.

Student work captured in the student e-portfolios demonstrated student grasp of the environmental, economic, and social dimensions of food and food production and a dramatic change during the semester in their thinking about food. At the start of the semester students in all four courses thought of food as a

Table 17.2. Summary of Data Collected and Assessment Tools

Student	Faculty	Community Partners	Project
Demographics	Course e-portfolios	Functionality of product	Project e-portfolio
Coursework	provide a formal, consistent framework for each faculty member to evaluate student learning outcomes, develop plans for course improvement, and make visible their scholarship.	Level of satisfaction	brings faculty together in assessing overall project success, developing plans for project improvement, and disseminating program outcomes.
Service-learning course projects			
Reflections			
E-portfolios			
Service-learning surveys			

personal source of physical well-being, essential for health and energy. They viewed food within the community as driven by culture and tradition, and issues of world hunger dominated their global perception of food. Student thinking about food changed to reflect an understanding of how food choices impact the environment, the economy, and social well-being at individual, local, and global scales and that these choices often pose ethical dilemmas. A student in the biology course writes, "I now see that food is not just for nourishment and pleasure. Its production and consumption have infinite effects in the world. When one thinks about food, one must keep in mind that it does not just affect those who eat it, but also those who produce it, the community in which it is produced and sold, and its source, the environment." A graphic design student writes, "Should I design for unhealthy food? For cigarettes? For alcoholic beverages? Am I selling the truth or a lie?"

Student work with their multidisciplinary service learning teams and community partners allowed them to apply their course knowledge and moved them from positions of basic awareness to informed action. A student taking the biology course writes, "I mentioned previously that feeding the world was most important, so now that I'm aware that we actually could be doing that if it weren't for the high demand for meat production, I've tried to eat meat only once or twice a week." A graphic design student writes, "I think I've learned how to appropriate the techniques of corporate advertising, so that I can subvert them and apply them to 'the other side.'" A student in risk management writes, "This course, along with the community aspect of it, has taught me to bridge the gap between research and application; in other words, I should use what I have learned by applying what I know to my life and live it out in actions."

Furthermore, the multidisciplinary composition of the student service-learning

teams appeared to enhance the quality of the products they produced for the community partners. A poster designed to promote awareness of and encourage food waste composting provides an especially nice illustration of the synergy possible with multidisciplinary expertise. Here, students from three courses came together, combining graphic design expertise; leadership, organizational and communication skills; and knowledge of ecosystem ecology and principles of sustainability; and they produced an end product that was visually appealing and provided a strong organizational identity for the community partner while expressing the economic, environmental, and social benefits of composting. In conclusion, this multidisciplinary service-learning model triangulates faculty, students, and community partners and fosters learning communities that facilitate communication, collaboration, knowledge sharing, and innovative solutions to complex problems. We anticipate broad utility of this approach in advancing teaching and learning about other inherently multidisciplinary issues.

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