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Building Capacity for Sustainability through Curricular and Faculty Development: A Learning Outcomes Approach

Jennifer H. Allen, Jeffrey J. Gerwing, and Leslie G. McBride

Abstract

Portland State University has made integration of sustainability across its academic programs an institutional priority. This article describes the strategies that have been used to engage faculty in developing sustainability curricula, including adopting sustainability as one of eight campus-wide learning outcomes, incorporating sustainability into the general education program, providing faculty development, and developing a Graduate Certificate in Sustainability. The article shares lessons learned and next steps planned to advance Portland State's sustainability curricula.

Sustainability is one of those big, complex concepts that defy easy definition or simple responses, yet demand attention for our collective well-being. (Timpson et al. 2006, xv)

Portland State defines sustainability as an integrating concept that encompasses the interaction of humans both with each other and with the natural environment, guided by the objective of improving the long term health of social, economic and environmental systems. In addition to being central to the vision and values of Portland State, this commitment to sustainability is shared by many citizens, governments and members of the business community in the Portland metropolitan region and the State of Oregon. This alignment, combined with Portland State's longstanding leadership in community-based learning, makes the development of sustainability curricula a natural priority for the university.

Portland State's efforts to develop sustainability curricula also reflect a growing interest in sustainability education in higher education. While many early sustainability efforts focused primarily on "greening" campus operations, in recent years there has been growing interest in exploring how sustainability can be integrated into both curricula and research. Building on its motto—"let knowledge serve the city"—Portland State recognizes the potential to expand its long history of community-based learning to provide opportunities for students to learn about sustainability experientially at both undergraduate and graduate levels.

Portland State's Academic Sustainability Programs

Portland State's engagement in sustainability-related curricular programs dates back to the 1970s, when the university developed the first Environmental Science and Resources Ph.D. program in the United States. Portland State's urban planning program also has a longstanding national reputation for its expertise in livability and sustainability issues, a leadership position aligned with the Portland region's innovation in planning and community design. Course work in environmental sustainability was first introduced into the general education program in the mid-1990s and over the past decade many departments have developed sustainability-oriented courses.

In the academic year 2000-2001, the university launched a broader initiative to integrate sustainability into its academic programs, research, and operations by appointing its first campus operations sustainability coordinator and coordinator for academic sustainability programs. Portland State established the Center for Sustainable Processes and Practices (the Center) in 2006 to promote and support academic sustainability activities on campus with an emphasis on facilitating multidisciplinary research and community engagement. The Center's efforts received a significant boost in the fall of 2008 when the James F. and Marion L. Miller Foundation awarded Portland State a \$25 million ten-year challenge gift to expand its academic sustainability programs.

The resources provided by the Miller Foundation gift are being invested in enhancing student learning opportunities related to sustainability, strengthening faculty research and curricular development, and supporting community engagement. Specific investments of the Miller Foundation funds have included supporting multidisciplinary faculty research teams, providing staff support for internships and student leadership development, and funding the development of courses and curricular initiatives in specific department and degree programs. A number of the activities described in this article have been supported with Miller Foundation funding.

As part of a strategic planning process undertaken in 2005 as well as more recent planning related to the Miller Foundation gift, Portland State actively engaged community partners in identifying priority needs and opportunities for sustainability-related curricula. In both cases, community partners from private sector companies, government agencies, and nonprofits were invited to provide input on what they saw as the key skills and knowledge base that Portland State should ensure its students were developing related to sustainability. Two of the most important elements identified through these sessions were multidisciplinary perspectives and "systems thinking," and these elements have continued to serve as central themes as Portland State has expanded its sustainability curricula.

Commitment to Campus-wide Integration—Curricular Implications

Portland State’s Declaration of Support for Sustainability, developed in 2005, outlines the following objectives guiding the university’s sustainability programs:

1. To infuse sustainability into all colleges, schools and programs
2. To develop a sustainable physical campus that is an example to other institutions
3. To make Portland State University a demonstration model of sustainable processes and practices
4. To develop core multidisciplinary research competencies in key sustainability areas related to pressing real world problems (PSU 2004)

The commitment to multidisciplinary approaches embedded in these principles is reflected in Portland State’s Graduate Certificate in Sustainability (<http://www.pdx.edu/sustainability/graduate-certificate-sustainability>). Formally approved in 2008, the Certificate was developed by a multidisciplinary group of faculty to provide a mechanism for any graduate student to gain grounding in the basic principles of sustainability, in addition to gaining the disciplinary expertise provided through masters or Ph.D.-level course work. Certificate students gain an understanding of the major theories and concepts related to the key dimensions of sustainability, as well as case analysis experience. Students must complete six classes totaling a minimum of twenty-two credits, including four core courses that provide exposure to the breadth of contemporary sustainability concepts and offer an opportunity for interaction among students with different disciplinary backgrounds. The core courses of the program—several of which are team-taught—address ecological, social, and economic theoretical frameworks and the fundamentals of implementing sustainability on the ground.

The development of the Certificate program implicitly involved the definition of learning objectives, as faculty worked together to ensure the core elements of sustainability would be conveyed through the core courses. A focus on such “learning outcomes” has also been central to Portland State’s efforts to integrate sustainability into the undergraduate experience and the University Studies general education program. In recent years, developing learning outcomes has emerged as a central strategy for strengthening general education programs nationally as well as at Portland State. The movement toward the use of learning outcomes reflects a shift from “teaching” to “learning” as the core focus of curricular development. The following section traces the process through which learning outcomes have been developed and adopted at Portland State, with specific focus on the integration of sustainability in this process.

Learning Outcomes as a Strategy for Curricular Development

In 2009, the Association of American Colleges and Universities (AAC&U) released survey findings showing that 78 percent of its member institutions had established a

common set of intended learning outcomes for their undergraduate students (Association of American Colleges and Universities 2009). Of these institutions, 24 percent identified sustainability as among the learning outcomes at their campus (Schneider 2009). These findings provide some of the best evidence to date of the national progress being made in the shift from teaching to learning. Other indications of this shift include greater incorporation of learning theory and research into course development and delivery, and the push for greater accountability through ongoing assessment of both general education and disciplinary programs.

Reflecting these trends, Portland State's leadership has demonstrated continued commitment to student learning and success over the years, especially through its innovative general education program—University Studies. Implemented in 1994, University Studies is a four-year program consisting of interdisciplinary courses designed to address the student learning goals of critical thinking, communication, diversity, and ethical issues and social responsibility (White 1999). The university's fifteen years of commitment to community-based learning also reflect its understanding of the powerful role of active engagement in student learning.

Having based its general education program on four main learning goals for the past fifteen years, Portland State is no stranger to the value of developing curricula around learning outcomes. These four goals, which are prominently displayed on Portland State's general education web pages (<http://www.pdx.edu/unst/university-studies-goals>), are introduced during the first year seminar, and incorporated into course design; they also form the basic organizing structure of student e-portfolios, and provide essential reference points for assessment. Even with this history of using a learning outcomes approach in general education, however, when the institution's leaders decided to initiate development of a set of campus-wide learning outcomes those responsible for carrying out the charge were somewhat daunted by the task.

The Campus-wide Learning Outcomes Process at Portland State

The Vice Provost for Instruction and Dean of Undergraduate Studies carried primary responsibility for the Campus-wide Learning Outcomes (CWLOs) project that was initiated during spring of 2007. At that time, the Institutional Assessment Council and the Center for Academic Excellence (CAE) Assessment Integration and Support Team (the Assessment Team) initiated a review of institution-level learning outcomes based on recommendations from key sources, including AAC&U's report, *Liberal Education and America's Promise* (AAC&U, 2007).

Over a span of eighteen months, the Office of Academic Affairs, the Institutional Assessment Council (IAC), and the Assessment Team organized faculty discussions about the general merit of taking a campus-wide approach to learning outcomes as well as creating opportunities for faculty and staff to get involved in actual learning outcome development. The earliest of these opportunities was a faculty symposium held in fall 2007 to elicit reactions to the IAC's efforts to identify appropriate learning outcomes for Portland State and to share the supporting rationale for them. Given the

project's ambitious nature and the significant impact it would have on academic units, faculty members attending the symposium were intent on understanding the rationale for institutional learning outcomes and concerned to know more about how and why decisions were made to move forward on their development. Faculty wanted to understand the amount of work involved and to be satisfied—as much as possible at this early stage in the process—that CWLOs would result in curricular improvements.

The ensuing discussion was frank, sometimes intense, and produced valuable feedback that informed subsequent steps taken by IAC members and administrators. One such step was to meet with chairs of key faculty senate committees to hear their concerns and incorporate their feedback. Another step was taken by graduate students on the CAE Assessment Team, who organized a series of focus group discussions with students to elicit their input. Feedback gathered from all of these sources was reviewed during IAC meetings, incorporated into the CWLO development process, and presented for review and comment during faculty senate meetings.

To encourage faculty members to actively engage with the proposed CWLOs, the IAC Chair and the Assessment Team designed a pilot project to link the learning outcomes to program-level learning and assessment practices. The project took place during winter and spring terms of 2008, culminating in a CWLO showcase event and reception held at the end of that academic year. At the showcase, thirty-four different poster presentations of results were on display for review by faculty, staff, and administrators. In hindsight, the showcase was one of the most significant events in terms of gaining faculty acceptance of the CWLOs. The number and quality of the pilot projects clarified participants' understanding of the power of a learning outcomes approach and the range of the thirty-four applications helped illustrate the fundamental distinctions between this approach and the instructor-centered, content-based approach commonly used during course development.

As a result of this work, progressive rounds of valuable feedback were available to IAC members as they composed and revised each learning outcome. Eight CWLOs were presented to and accepted by the faculty senate in March 2009. These CWLOs addressed disciplinary and/or professional expertise; creative and critical thinking; communication; diversity; ethics and social responsibility; internationalization; engagement; and sustainability.

At the time the faculty senate ratified the CWLOs, the “sustainability” learning outcome was written as follows: “Students will identify, act on, and evaluate their professional and personal actions with the knowledge and appreciation of interconnections among economic, environmental, and social perspectives in order to create a more sustainable future.” The campus community will be involved in further refinement of this outcome for some time. Some of this refinement is occurring as efforts are made to establish sustainability within the undergraduate curriculum. These efforts are described in the next section.

Sustainability in General Education

While a campus-wide learning outcome in sustainability declares an institutional commitment to sustainability education, individual programs, departments, and faculty members must then translate that commitment into specific student learning experiences. General education courses can present early opportunities to incorporate interdisciplinary sustainability learning outcomes because they are often less constrained by the need to cover discipline-specific content than are courses related to disciplinary majors (e.g., Chase and Rowland 2004).

Sustainability has not historically been one of the four explicit goals of the University Studies Program. However, from the outset it has been a strong theme within the interdisciplinary curriculum, as reflected in courses such as Global Environmental Change, Environmental Sustainability, and Healthy People/Healthy Places.

The recent adoption of the CWLO in sustainability, together with the resources made available through the Miller Foundation gift, has provided an opportunity to enhance sustainability as an emphasis of the University Studies curriculum.

To develop a baseline for future course and curricular development, a small faculty working group was convened to identify which University Studies courses had already incorporated sustainability. As part of a larger effort to improve transfer student success, this working group focused on the approximately 400 courses that constitute the “Upper-division Cluster” portion of the curriculum. These are courses taught by departments and designed to address the goals of the University Studies Program.

The working group asked faculty to self-identify their sustainability courses via a web-based survey. The reasoning in employing this approach, as opposed to developing *a priori* criteria for identifying sustainability courses and generating the list ourselves, was to ensure that the criteria for what constitutes a sustainability course in the University Studies Program would be reflective of the work that faculty had already done in course development. Also, this approach provided the opportunity to gauge overall faculty interest in the CWLO in sustainability without predetermining which courses were “in” and which were “out.”

Of the 413 survey invitations sent out, 247 were returned. Three clear themes emerged from the completed surveys:

1. **The majority of respondents identified sustainability as an element of their courses.** In response to the question, “Does this course in some way address the recently-adopted campus wide learning outcome in sustainability as you understand it?” 58 percent answered yes, 32 percent no, and 9 percent were uncertain. The 145 positive responses represent approximately 35 percent of all courses offered in the Upper-division Cluster portion of the University Studies curriculum and included courses from 33 different departments and programs.

2. **Several sustainability “Big Ideas” were commonly identified.** Drawing upon the work of the *Washington Center for Improving the Quality of Undergraduate Education* (2008) and Sherman (2008), faculty were asked to identify the sustainability concepts or principles in their courses from the following list:

<u>Sustainability “Big Idea”</u>	<u>Courses Identified</u>
Interconnectedness and interdependence (systems thinking)	48%
Social/economic equity	48%
Cultural diversity and traditional knowledge	45%
Intergenerational thinking	35%
Environmental/ecological literacy	30%
Environmental/ecological ethics	27%
Environmental justice	19%
Bioregionalism	15%
Assessing sustainability (e.g., “triple bottom line”)	14%
Ecological design (cradle to cradle design, green building)	12%
Other	7%

One explanation for the high incidence of faculty identifying both “Social/economic equity” and “Cultural diversity and traditional knowledge” as concepts in their courses is that they are similar to the “Ethics and Social responsibility” and “Diversity” goals of the University Studies Program, whereas “Environmental/ecological” concepts have been incorporated into individual courses but not yet program wide.

3. **Categorizing courses by the amount of emphasis placed on sustainability was difficult.** To attempt to determine the relative emphasis placed on sustainability in courses identified by faculty, a taxonomy proposed by the Association for the Advancement of Sustainability in Higher Education (AASHE) as part of their Sustainability Assessment, Tracking & Rating System (STARS) program was utilized (<http://stars.aashe.org/>). The 145 faculty members who identified their courses as addressing sustainability were asked to classify their courses as either *sustainability-focused* (i.e., courses where student application of sustainability concepts and principles to better understand multi-faceted issues and problems that integrate economic, social, and environmental aspects is a primary focus) or *sustainability-related* (i.e., courses that incorporate sustainability as a distinct course component or module or concentrate on a single sustainability principle or issue). In response, 29 percent chose sustainability-focused, 54 percent sustainability-related, and 17 percent neither.

However, the wide range of faculty responses to the prompt “Briefly describe your rationale for classifying this course as sustainability-related or sustainability-focused” suggests that applying this distinction with any consistency across the curriculum would be difficult. For example, some faculty described their courses as sustainability-focused because they involved study of something that has been sustained over time (e.g., “The National Parks are the ultimate sites of sustainability in that we want to sustain them

into the future as they have sustained themselves for generations”). Other faculty, in contrast, described using approaches in their sustainability-focused courses that explicitly integrated economic, social, and environmental aspects into addressing multidisciplinary problems (e.g., “Use public policy and participatory processes to balance environmental, economic, and social concerns”). Another group of faculty described their courses as providing theoretical bases for understanding sustainability without addressing sustainability explicitly (e.g., “Elementary Ethics offers a theoretical knowledge of normative ethical alternatives to proper conduct within society”).

In general, the results of this survey were encouraging in that many faculty members indicated an interest in the CWLO in sustainability and openness to receiving support in incorporating sustainability more explicitly into their courses. For example, one faculty member wrote,

[T]he topic of sustainability has not been fully fleshed out in the Japanese Religious Traditions course, but could easily be developed. Water, for example, is extremely important in Japanese culture and has both practical and religious significance. It is very carefully conserved and preserved.

This broad-based faculty interest in the CWLO in sustainability, combined with the wide range of faculty articulations of how sustainability is or might be incorporated into their courses, suggested the need for specific sustainability course-development resources that could support a diversity of approaches while maintaining programmatic cohesiveness. Course-level sustainability learning outcomes that could be mapped onto Portland State’s broader general education goals were sought out in order to support faculty in incorporating sustainability into additional general education courses. To find examples of course-specific learning outcomes, syllabi were collected from faculty who had indicated in the first survey that their courses addressed the CWLO in sustainability. Of the 55 syllabi provided, 22 contained either explicit sustainability learning outcomes (e.g., “Students will apply basic physical laws and biological principles to analysis of resource use”) or implicit sustainability learning outcomes (e.g., “To introduce students to feminist perspectives on the causes of and solutions to the problem of global warming”) (see Table 1).

Perhaps not surprisingly, most of the sustainability learning outcomes identified in this review of course syllabi were related to increasing student knowledge and developing students’ abilities to explain and describe interconnections among concepts and perspectives. Fewer of the outcomes addressed skills that students might apply to sustainability efforts (e.g., develop and evaluate strategies) and only one addressed the affective domain of values and attitudes. The overrepresentation of knowledge-based learning outcomes compared to skills-based and affective outcomes in this data are consistent with the general pattern seen in education for sustainability in general education (Shephard 2008). However, if general education is to play a significant role in helping society develop more sustainable policies and behavioral norms, students need opportunities to develop their problem-solving skills and to test their beliefs and attitudes in working through actual sustainability problems (Rowe 2007). Portland

State’s ongoing curricular development work will pay attention to these underrepresented domains because they are particularly well suited to community-based learning.

Table 1. Portland State’s General Education Goals and Corresponding Course-level Student Learning Outcomes in Sustainability Drawn from the Syllabi of General Education Courses.

Portland State’s General Education Goal

Corresponding Course-level Sustainability Learning Outcomes

Inquiry and Critical Thinking: Students will learn various modes of inquiry through interdisciplinary curricula—problem-posing, investigating, conceptualizing—in order to become active, self-motivated, and empowered learners.

- Assess changes to regional ecologies resulting from economic development.
- Analyze claims surrounding environmental controversies.
- Describe connections among environmental condition, human health, and patterns of urbanization.
- Evaluate the environmental consequences of different economic systems.
- Understand systems thinking as an interdisciplinary problem solving process.

Communication: Students will enhance their capacity to communicate in various ways—writing, graphics, numeracy, and other visual and oral means—to collaborate effectively with others in group work, and to be competent in appropriate communication technologies.

- Learn the skills to form and maintain successful interdisciplinary problem-solving teams.
- Produce descriptions and analyses of multidisciplinary problems that make use of written, numerical, graphical, and visual information.

The Diversity of Human Experience: Students will enhance their appreciation for and understanding of the rich complexity of the human experience through the study of differences in ethnic and cultural perspectives, class, race, gender, sexual orientation, and ability.

- Explain the cultural foundations of environmental relationships.
- Explain feminist perspectives on the cause of and solutions to global climate change.
- Explain indigenous perspectives on the definition of sustainability.
- Explain and apply the concept of environmental justice.
- Analyze interrelationships between environmental health and social justice.

Ethics and Social Responsibility: Students will expand their understanding of the impact and value of individuals and their choices on society, both intellectually and socially, through group projects and collaboration in learning communities.

- Describe the linkages between human activities and environmental change.
 - Apply ethical theories to environmental issues.
 - Conduct a personal resource audit or “Ecological Footprint” assessment.
 - Develop & evaluate strategies to improve the health of interconnected environmental and social systems.
 - Articulate a personal understanding of the values that help guide your actions and decisions as they impact nested environmental, social, and economic systems.
-

Faculty Development—Sustainability Retreat

As a complement to the collection and review of syllabi within University Studies and to better understand graduate student course experiences, CAE staff and graduate assistants initiated meetings with faculty who were either teaching courses affiliated with the Graduate Certificate in Sustainability or teaching special topics and experimental courses at the graduate level. The goal of these meetings was to talk with instructors about their course goals, learning outcomes, and assignments. These discussions sought to understand what aspects of sustainability (i.e., environmental, social, and/or economic) were emphasized in these courses and how student learning outcomes might be distributed between knowledge, attitudes, and/or skills domains. During these informal interviews, faculty were asked for copies of their syllabi and additional descriptions of assignments.

Over forty syllabi were collected through this process, which took place over two terms. Review of their content revealed two overall and somewhat surprising findings: first, community engagement activities—including field work, field trips and interviews, and community projects—comprise less than 15 percent of all sustainability assignments; second, 50 percent of the syllabi contained neither learning objectives nor learning outcomes. With these results in mind, a sustainability retreat was organized in spring 2009. Each faculty member who had been interviewed was invited, as were faculty teaching regularly scheduled undergraduate courses.

Convening faculty and hosting events such as retreats that bring together faculty with shared interests in a particular topic is one of the key roles that CAE plays. The expertise assembled at gatherings of this sort can address questions and common challenges. The sustainability retreat also helped faculty make connections with others teaching similar courses, creating a communication network that would help spread information necessary to implement change (Kezar 2009).

The day-long retreat was held two months after sustainability had been approved as a campus-wide learning outcome and was framed around the following goals:

- Understand the range and variety of sustainability curricula on campuses around the country as well as the factors supporting sustainability curricular development;
- Understand the range and variety of sustainability curricula and coursework at Portland State;
- Explore common ideas, approaches, goals, and challenges related to teaching sustainability courses;
- Discuss desired student gains from the learning opportunities offered through sustainability courses at Portland State;
- Identify constraints, challenges, barriers, and/or rough edges experienced in sustainability work and explore their potential solutions;
- Identify helpful resources and sources of support.

Co-facilitated by a sustainability educator known nationally for faculty and curricular development work, the retreat helped participants gain insight into the range and variety of curricular work taking place at campuses around the country as well as at Portland State. Initial results from the survey of faculty teaching undergraduate sustainability courses and information compiled by CAE graduate assistants were both shared at the retreat. The 20 full- and part-time faculty members attending the retreat shared background about themselves and their courses, discussed common concerns including pedagogical and interdisciplinary challenges, and shared perspectives on student learning outcomes and the learning opportunities in their courses. Participants' interest and imagination was sparked by the stories of novel teaching ideas and curricular innovations occurring nationally that were shared at the retreat. Discussions were particularly rich because the faculty participants had been teaching sustainability courses and thinking deeply about this subject for some time. Other participants, who taught part-time, brought perspectives from their full-time jobs doing sustainability work in the community.

Next Steps and Reflections

The activities and evaluations described above have made it clear that, in spite of Portland State's attention to learning outcomes, the university is a long way from effectively operationalizing sustainability as an outcome at the institutional level. Even though Portland State now has a CWLO for sustainability, there is plenty of work to be done to actually get people to think in terms of learning outcomes.

As a next step, CAE is continuing its review of course syllabi collected in the spring of 2009, taking a closer look at the alignment between stated student learning outcomes and course elements, including assignments, readings, and class sessions. Improving this alignment is of interest for curricular and faculty development planning in order to strengthen more direct connections between student learning and the elements of the course designed to encourage that learning. CAE is also planning focus groups to better understand students' experiences related to learning about sustainability at Portland

State. Conducting interviews with different groups of Portland State students, including graduate students in sustainability programs, student leaders in campus sustainability programs, and undergraduates from diverse majors with interests in sustainability, should enhance the university's understanding of what students find most valuable in their sustainability studies and where they see room for improvement.

The findings from these studies will be incorporated into a series of faculty development workshops that will draw upon the successful model of AASHE's Sustainability Across the Curriculum Leadership workshops (www.aashe.org/profdev/curriculum.php). The goals of these workshops will be to present faculty with examples of best practices, drawn from the work of their peers, for incorporating sustainability student learning outcomes into their courses and for making explicit connections between those learning outcomes and the work they ask students to complete.

A recent evaluation of the Graduate Certificate has also identified a number of opportunities to strengthen both individual courses and the integration among courses in this program. Core faculty in the program are developing a road map to identify the key activities and investments needed over the coming years to both meet the increasing demand for this program and ensure that the intended learning outcomes of the program are being achieved.

Finally, although Portland State is known nationally for its commitment to community-based learning, this assessment suggests that surprisingly few faculty members have fully integrated community-based learning elements into their sustainability-related courses. This gap constitutes a missed opportunity. As Cortese (2006) points out, the sustainability curricula that students experience should be part of their institution's regular work "to improve local and regional communities, contributing to making them healthier, more socially vibrant and stable, economically secure, and environmentally sustainable" (p. xiii). Cortese also notes that an institution's curriculum should be closely connected to its research and to "understanding and reducing any negative ecological and social footprint of the institution" (p. xiii).

While Cortese's comments are strongly aligned with Portland State's commitment to the campus as a "living laboratory", the university clearly has work to do to more fully integrate sustainability teaching, learning and research opportunities on campus. In recent years, Portland State faculty and administrators have voiced an aspiration for the university to become a "living laboratory" for learning about sustainability in an urban environment. Achieving this aspiration will clearly require that the university more fully integrate its long-standing community-based learning programs and its emerging sustainability curricula, but it will be important to ensure that faculty receive sufficient support for such opportunities to be realized. The payoff will be significant if Portland State can more fully advance such integration. As G. Chase has observed, through such a re-visioning curriculum can become the avenue through which real change is possible (personal communication, May 8, 2009).

Conclusion

Educating students about the sustainability challenges and opportunities in urban environments is a growing global imperative. In the United States and internationally, population is increasingly concentrated in urban communities; the United Nations estimates that by 2030 at least 60 percent of the world's population—approximately 4.9 billion people—will be living in cities (UNDESA 2006). Successful approaches to urban sustainability challenges must reflect the specific economic, social, and environmental context of individual urban communities. These are compelling reasons for urban-serving universities to mobilize their research and educational programs around sustainability challenges and to engage in sustainability-related partnerships relevant to their respective communities.

The broader Portland region has often been recognized as a leader in sustainability and Portland State has benefited greatly from input community partners have provided on the skills and knowledge base that graduates need to contribute to sustainability solutions. Although Portland's leadership in this area may provide Portland State with some unique advantages, other urban-serving universities have similar opportunities to engage their students in learning about sustainability in ways relevant to their particular community. The learning outcomes approach pursued by Portland State may be particularly relevant to the topic of sustainability—a topic that is of increasing importance in terms of both theory and practice—as it focuses attention on the translation of teaching to learning.

References

- Association of American Colleges and Universities. 2007. *College learning for the new global century: A report from the National Leadership Council for Liberal Education and America's Promise*. Washington, DC: Association of American Colleges and Universities.
- . 2009. Nearly 80% of colleges now have a broad set of learning outcomes for all students and more than 70% now assess outcomes across the curriculum beyond the use of course grades. http://www.aacu.org/press_room/press_releases/2009/membersurvey09.cfm (accessed May 6, 2010).
- Chase, G. W., and P. Rowland. 2004. The Ponderosa Project: Infusing sustainability in the curriculum. In *Sustainability on campus: Stories and strategies for change*, ed. P. F. Barlett and G. W. Chase, 91–105. Cambridge, MA: MIT Press.
- Cortese, A. 2006. Foreword: Higher education and sustainability. In *147 practical tips for teaching sustainability: Connecting the environment, the economy, and society*, ed. M. Timpson, B. Dunbar, G. Kimmel, B. Bruyere, P. Newman, and H. Mizia, xi–xiv (Madison, WI: Atwood).

- Kezar, A. 2009. Synthesis of scholarship on change in higher education. Paper presented at Mobilizing STEM Education for a Sustainable Future, Atlanta, GA, January 4–6, 2009.
- Portland State University (PSU). 2004. Declaration of support for sustainability. Available at <http://www.pdx.edu/sustainability/about-us-academics> (accessed May 6, 2010).
- Rowe, D. 2007. Education for a sustainable future. *Science* 317 (20 July): 323–324.
- Schneider, C. G. 2009. Helping students connect: General education, liberal education, and intentional practice across the curriculum. Presented to the Association of American Colleges and Universities, Minneapolis, MN, May 30, 2009.
- Shephard, K. 2008. Higher education for sustainability: Seeking affective learning outcomes. *International Journal of Sustainability in Higher Education* 9 (1): 87–98.
- Sherman, D. J. 2008. Sustainability: What's the big idea? *Sustainability: The Journal of Record* 1 (3): 188–195.
- Timpson, W., B. Dunbar, G. Kimmel, B. Bruyere, P. Newman, and H. Mizia. 2006. *147 practical tips for teaching sustainability: Connecting the environment, the economy, and society*. Madison, WI: Atwood.
- United Nations Department of Economic and Social Affairs (UNDESA). 2006. *World urbanization prospects—The 2005 revision* (October 2006). New York: United Nations ESA/P/WP/200.
- Washington Center for Improving the Quality of Undergraduate Education. 2008. “Curriculum for the Bioregion” initiative: Sustainability learning outcomes 2008. http://www.evergreen.edu/washcenter/resources/upload/Sustainability_Learning_Outcomes_2008.doc (accessed May 6, 2010).
- White, C. 1999. Conceiving University Studies. *The Journal of General Education* 48 (2): 75–81.