Ecologists and the development of sustainability curricula for majors vs. non-majors

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Infusing ecology into and developing sustainability curricula

Why should ecologists be leaders in developing sustainability curricula?

What is easily doable?

What has and is being done?

What else can ecologists do?

Sustainability could secure a good future

College students flock to 'green' degrees, careers

Reaping the benefits: Arizona State University graduate student Lana Idriss picks herbs in one of the campus gardens. Students at the new School of Sustainability volunteer their time to tend the gardens, and what they harvest is served in campus dining halls.

Photos by Vince Palermo, Global Institute of Sustainability

Winds of change: High above ASU, School of Sustainability student Drew Bryck gets a closer look at a rooftop wind turbine. Bryck wants a career in international climate-change policy.

Incentives to develop sustainability curricula

August 3, 2009
USA TODAY
Article

Highlighting
Arizona State Univ.

See http://www.ulsf.org/resources_sust_degrees.htm

<http://www.aashe.org/resources/programs.php>

For other programs

To think Indian is to
make eco-buildings
with spruce root
or rebar.

CEDAR KAHKAK, 22 years old
Sustainable Development major
College of Menominee Nation, WI
Raised on wild rice and
sustainability.

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INDIAN

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THEIR WAY OF THINKING.
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thinkindian.org

Most tribal colleges are built with green building practices.

Sustainable
Development
Major – ad in
NY Times Magazine

Research shows
students
underrepresented in
science careers
are attracted to
majors in applied
research dealing
with global or
local community
environmental
problems.

Incentives for Higher Education Institutions to Develop Sustainability Curricula

THE PRINCETON REVIEW GIVES 697 COLLEGES "GREEN" RATINGS IN NEW 2010 EDITIONS OF ITS ANNUAL COLLEGE GUIDES AND WEBSITE PROFILES OF SCHOOLS – July 27, 2009

- Rating Scores Based on Environmental Practices, Policies and Course Offerings**
- Green Honor Roll Salutes 15 Colleges Receiving Highest Rating Score of 99**

<http://www.princetonreview.com/green/press-release.aspx>

American Association of State Colleges and Universities

A Higher Education Policy Brief •
June 2008

The State College Role in Advancing Environmental Sustainability: Policies, Programs and Practices

By Thomas Harnisch,
Research Associate

Table 1. Leading the way toward sustainability: An ecological mission for American universities

System	Goal	Reduce	Increase
Energy	Seek fossil fuel independence	Fossil fuels	Renewable energy
Water	Conserve water resources	Water waste	Water conservation
Materials	End materials waste	Materials waste	Green procurement policies
Food	Eat food produced sustainably	Industrial, far-flung food system	Sustainable, more regional food system
Land	Create and abide by a land ethic	Treatment of land as a commodity	Wise stewardship of land
Transport	Create sustainable alternatives to car-based transit	Car dependence/sprawl	Public transit/compact settlement
Buildings	Create "green" buildings	Conventional buildings	Ecological design
Curriculum	Guarantee ecological literacy	Alienation from natural world	Connection to natural world
Research	Prioritize research for a sustainable world	Research undermining sustainability	Research promoting sustainability

Factors favoring sustainability curriculum development

Majors/minors and graduate programs developed in response to:

- Student demand and interest
- New and existing faculty research interests
- Increased need for maximizing use of existing University resources
- University mission focus on environmental stewardship and social responsibility
- National trends in higher education
- Resource-obtaining value to the University

Barriers to Sustainability Curriculum Development in Higher Ed.

Curriculum requires collaboration across disciplines and must be problem-oriented

Applied research focus may not relate to current faculty research interests

Departments may view interdisciplinary curriculum as “watering down” each discipline’s major – especially if integrating non-science areas with the sciences

University may view interdisciplinary focus as problematic for management or assessment of success of faculty and programs

Process for developing sustainability curricula

Put capable person(s) in charge of campus “sustainability” initiatives – curriculum, facilities, operations, outreach

Infuse “sustainability” into General Education program coursework

Infuse “sustainability” into summer orientation and First Year Program courses

Develop interdisciplinary minor from existing courses with resource–management, development, globalization and environmental stewardship focus

Develop interdisciplinary majors – 4 ways

Approaches to Developing Interdisciplinary Majors

Develop “Individualized Major” self-designed interdisciplinary model to use as way to pilot new majors

Develop Bachelor of General Studies interdisciplinary concentrations to market new careers to non-traditional students in the workforce

Develop tracks with interdisciplinary components in existing majors

Reward faculty for interdisciplinary collaboration in curriculum development and research — through grants, faculty release time, consideration in promotion and tenure process

Sustainable Energy Studies at Eastern Connecticut State Univ.

Environmental Earth Science – leader dept.

Minor Program in
Sustainable Energy
Studies

Major Program being
developed

Strong contribution to
General Education and
First Year Program
coursework

Facilities and Administration Commitment

LEED Certified Buildings

Recycling Program

Energy Conservation
Program

Geothermal Heating and
Cooling

Biodiesel Heating Project

President's signing of
Talloires Declaration and
Institute of Sustainable
Energy

Campus and Community as Sustainability Field Labs

PV Lighting
Wind Turbine
Meteorological
instruments
Building sub-metering

<http://mobilizingstem.wceruw.org>

**NSF- funded project
Univ. of Wisconsin - Madison**

- “Instructors in postsecondary institutions are slow to incorporate into their teaching the globally relevant resources and research-based teaching methods already developed”
- “Research indicates that without changes to structural and cultural features of postsecondary institutions, particularly research universities, these problems of uptake and scale-up will not be solved”
- “We believe that reliance on (a) the grassroots efforts of individuals, campus groups, and networks; (b) traditional modes of disseminating intellectual knowledge; or (c) people’s “natural” inclination to adopt new practices that are supported by convincing evidence about change is *fundamental to our slow progress*”

--Has advisory board - Ecology rep. - David Blockstein is Senior Scientist with the National Council for Science and the Environment (NCSE),

Council of Colleges of Arts & Sciences
44th Annual Meeting
November 11-14, 2009

Session Q: Sustainability in Higher Education

This panel will explore: why Higher Education has lagged behind the private sector; why the business world embraces sustainability and the need for “Green” jobs; how developing curricula in sustainability can foster innovative pedagogical techniques focused on interdisciplinary teaching and learning, the challenges of developing sustainability programs at universities: breaking down academic “silos;” and opportunities for external funding in sustainability.

Resources for Sustainability Education – K-12 level and Teacher Preparation

U.S. Partnership for Education for Sustainable Development

www.uspartnership.org – 10/2008 summit – developed K–12 sustainability education standards – organization led by Dr. Debra Rowe, based at Oakland Community College – Ph.D. Business – many publications

Components include: intergenerational responsibility, interconnectedness, ecological systems, economic systems, social and cultural systems, personal action and collective action

Resources for integrating sustainability into higher education institutions

Five major national efforts to integrate sustainability into higher education institutions' mission and planning, curricula, research, student life, facilities, purchasing and operations.

DANS – Disciplinary Associations Network for Sustainability

HEASC – Higher Education Associations Sustainability Consortium

AASHE – Association for the Advancement of Sustainability in Higher Education

ACUPCC – American College and University Presidents' Climate Commitment

Green Jobs – multiple resources, Consortium for Education in Renewable Energy Technology

What can ESA do to promote infusion of ecology into sustainability curriculum and research?

Develop a statement on how ecologists can influence change in sustainability education at higher education institutions

Develop collaborations with current federally-funded national projects to infuse ecology into STEM education reform on sustainability issues

Develop a clearinghouse of best practices in infusion of sustainability into ecology education and ecology research at the college and K-12 levels to guide ESA members