



The Natural Step for Colleges and Universities

By Mike F. Keen¹ and Krista Bailey²

Surveys of the attitudes of students, faculty, staff, and administrators consistently demonstrate that higher education is one of the leading sectors in recognizing the importance of the sustainability revolution. Yet, to date, its most important impact and visible gains have been on the nonacademic side of the house, in areas such as facilities, operations and maintenance, groundskeeping, purchasing, and food service. Lagging behind, but still robust, are developments in teaching and research in the newly emerging field of sustainability studies. At first blush, this seems like a counterintuitive irony or just another example of the residents of the ivory tower out of touch with the real world. Upon closer examination, it is not surprising.

Building out a new field of study requires credentialed faculty members (Ph.D.s) in place constructing new curriculums and initiating new research agendas. Yet, most of the faculty members who are currently teaching courses and doing research in sustainability studies are self-educated and not formally trained. Sustainability studies is an adjunct to their other areas of specialization. How could it be any different, as there are still only a handful of programs offering a Ph.D. in the field? Most of these programs are just beginning to turn their first graduates out into the market.

In many ways, the situation in sustainability studies today is not unlike that of informatics some two decades ago. Then, if you wanted an expert in information technology, you might just as well have looked for a nerd in a garage or a hacker on probation. There were few degree programs and as is the case with sustainability studies today, most budding computer scientists were self-taught on the side.¹

This is not to say that we don't have a goodly and growing number of sustainability programs out there. The last decade has seen a plethora of new minors, majors, and master's degree programs. How-

ever, what is conspicuously missing among them, unlike the other more traditionally established fields in the academy, is anything approaching the paradigmatic, or even multi-paradigmatic, consensus as to what the theoretical, methodological, and substantive foundations of the field might consist of and what must be taught. As a result, the quality and structure of these programs varies widely. No doubt this is due to a number of factors: its youth; the fundamentally interdisciplinary nature and wide breadth of the field required to adequately approach the triple bottom line of environment, economy, and society that it must address; and, the necessity to engage beyond the boundaries of the laboratory, classroom, and campus.

At the Indiana University (IU) South Bend Center for a Sustainable Future (<http://sustainthefuture.iusb.edu>), we have responded to this problem by taking advantage of the scientifically and systems-based approach that has been developed by The Natural Step (<http://www.naturalstep.org/>). Founded by Karl-Henrik Robèrt just over 20 years ago, The Natural Step (TNS) has become one of the leading sustainability research, education, and consulting nongovernmental organizations (NGOs) in the world. As Robèrt, a cancer-cell scientist and lover of nature, increasingly began to hear a new buzzword—sustainability—being passed around, he asked his colleagues, what does it mean? In response, he got the definition produced by the Brundtland Commission in 1987: "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."²

While this definition expressed a laudable sensibility, Robèrt found it lacking scientific clarity and rigor, and too abstract to provide a basis for systematic action and evaluation of the outcomes. Dissatisfied, he set out to discover the scientific and system conditions of a sustainable society with the help of many of his fellow scientists in Sweden, and eventually from around the world.³ To discover these conditions, they grounded their research in basic science that already had the general acceptance of the scientific community, i.e., the basic laws of physics, evo-

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¹LEED AP, Director, ²Assistant Director, Indiana University-South Bend, Center for a Sustainable Future, South Bend, Indiana.

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lutionary biology, and research into nature's cycles such as water, oxygen, and carbon. They came up with a concrete definition and a set of system conditions of a sustainable society which have continued to be developed and built upon for the last two decades:

In a sustainable society, nature is not subject to systematically increasing:

1. concentrations of substances taken from the Earth's crust,
2. concentrations of substances produced by society,
3. degradation of nature by physical means, and, in that society,
4. people are not subject to conditions that systematically undermine their capacity to meet their needs.⁴

The strength of The Natural Step Framework is its elegant simplicity, which nevertheless stands upon rigorously documented scientific foundations. It offers an easily learned and understandable framework that is nonjudgmental and non-prescriptive and can be easily applied in our households, in school, at work, and in our communities.

Using the system conditions developed by The Natural Step, one can easily develop a set of corresponding principles that can be acted upon, measured, and evaluated. At IU-South Bend we refer to this as our *Operating Manual for the Planet*:

1. Reduce and eventually eliminate our contributions to the systematic accumulation of materials from the Earth's crust (fossil fuels, metals, and minerals).
2. Reduce and eventually eliminate our contributions to the systematic accumulation of substances produced by society (plastics, toxic pesticides and herbicides, VOCs)
3. Reduce and eventually eliminate our contributions to the ongoing degradation of nature (ecosystems and ecosystem service such as fresh air, clean water, ice caps, forests, soil).
4. Reduce and eliminate our contributions to conditions that systematically undermine people's capacity to meet their needs (violations of human rights, unhealthy living conditions and work environments).

In addition to a set of system conditions and guiding principles, The Natural Step also provides a series of techniques for implementation that include such rhetorical devices as "Yes, and..." and "Can you help me?" Academic discourse is steeped in critical jousting. While this can be quite productive and even fun at academic conferences, when trying to create and get new course requests and degree programs approved by a faculty curriculum committee, or requesting new resources from a dean or vice-chancellor, it can be a distraction and an impediment. We

have consciously and carefully strived to train ourselves to avoid getting caught up in academic arguments in these situations by using the "Yes, and..." and "Can you help me?" devices. This strategy has led to quicker results and the creation of a supportive atmosphere among our faculty and administration.

Our students are learning how to use these devices to good effect. In a recent Sustainability Practicum, our project was to develop a proposal to help our campus food service become more sustainable. During conversations in class prior to meeting with the director of Food Services, the class was almost unanimous in its loud and insistent demand that we "get rid of all of the Styrofoam they are using." However, we learned from one of our journalism majors, who had interviewed the director, that the director liked the Styrofoam. It was cost effective and kept his takeout food warm. With this understanding, by the time of our face-to-face meeting with the director and the chef, the students never raised the issue. Instead, they explained their project, asked what the food service was already doing and what sorts of things it might be interested in pursuing. We left the meeting with an ally and an interest in helping us start a campus garden to grow herbs to be used in the daily menus. Now that we have begun to build a track record of shared accomplishment and trust, we can approach the issue of Styrofoam with the food service staff to reach a mutually beneficial end result.

TNS in the Classroom

At the IU South Bend Center for a Sustainable Future, we have found The Natural Step to be a terrific platform from which to carry out all of the components of our mission as an academic unit: teaching and learning, research and creative activity, and service and civic engagement. For example, in the area of teaching and learning we began by developing a minor in Sustainability Studies, one of the first in Indiana. We wanted to do more than put together a hodgepodge of already existing courses, but budget constraints would not allow us to create an entirely new curriculum. So we created a Foundations of Sustainability course as a gateway into the minor. In it, we use the TNS framework as our academic platform to teach system conditions of sustainability and strategies for implementation.

We use the TNS story and research to explore the scientific foundations of the four system conditions of sustainability and to engage students in identifying system condition violations as well as contributions. Then we examine backcasting, the Awareness-Baseline-Compelling Vision-Down to Action (ABCD) method for implementation, and we have adopted the Paradise Hotel Simulation used in TNS Level II workshops for the classroom. This is followed by our Sustainability Tool Box, which

introduces various sustainability strategies and protocols from biomimicry and cradle-to-cradle to life cycle analysis and LEED. In each case, we discuss how these strategies and protocols relate to the system conditions. For the final and major class project, students must create their own Household Sustainability Action Plans, using the ABCD method. They begin by developing Awareness in the introduction to the plan, followed by a Baseline Analysis using the four system conditions. Then they provide a Compelling Vision from which they backcast to get Down to Action. We also ask students to add an E to the ABCD method—Evaluate—and provide three to five metrics with which to measure their success.

The introductory course gives students an interdisciplinary framework within which to integrate the other courses of the minor that are drawn from existing offerings. In the capstone course, a Sustainability Practicum, we bring students back to The Natural Step to integrate and begin to apply all that they have learned. We start by teaching them how to make their own TNS presentations and we have each student make a presentation to a group of his or her choosing as well as to the class for their midterm exam. The rest of the course is spent examining the case studies and best practices of successful sustainability champions, businesses, and organizations, as well as meeting and interacting with local sustainability professionals.⁵

TNS also provides a robust and well-documented platform upon which to base research. There exists a large body of sophisticated scientific literature outlining the basic research that undergirds its framework and can be used as a firmly vetted evidentiary basis upon which to conduct a wide range of more directed and/or applied research.⁶ TNS itself encouraged this type of activity through its sponsorship of The Real Change Programme, “...an international alliance of universities examining the science of sustainable development in collaboration with businesses, NGOs, communities and policy makers.” Real Change was a three year research model preceding the research alliance known as the Alliance for Strategic Sustainable Development (<http://www.alliance-ssd.org/>). The Alliance is an international research program for sustainable development that plans to employ a unifying framework, the Framework for Strategic Sustainable Development (FSSD), as a foundation for effective cooperation across disciplines, regions, and nations.

In the area of service and civic engagement, the Center for a Sustainable Future has collaborated with TNS International and the USA Network to develop and deliver sustainability workshops to local/regional businesses, not-for-profits, and municipalities. Our workshops are closely based upon those developed by TNS and delivered to hundreds of companies around the world includ-



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ing IKEA, Nike, Interface, and cities like Portland, Oregon, and Madison, Wisconsin. To date, more than 270 people have participated in a day-long workshop, Sustainability and Innovation: The Natural Step to Prosperity⁷. The workshops introduce The Natural Step approach and outline the system conditions as well as our *Operating Manual for the Planet*. Workshop participants practice identifying the system conditions, learn how to begin the implementation process, and leave the workshop with an outline of how to begin planning for sustainability in their workplaces or organizations. Attendees have included representatives from municipal governments, community activists, nonprofits, university faculty and staff, and area businesses and always include students from IU-South Bend as well as from area colleges and universities including the University of Notre Dame and Goshen College. Such a diverse audience allows for the strengthening of a local sustainability network which has begun to work as a unit to address the challenges. Involving IU-South Bend students in the workshops has enabled them to gain valuable experience as leaders, and as they become aware of the issues and techniques, they can serve as guides and mentors for other workshop participants while strengthening their own knowledge in the field.

Every year, the center appoints four Sustainability Fellows who either work on their own projects or support the center’s ongoing efforts. All of our fellows are offered complementary registration to our annual sustainability and innovation workshops. Now in its third year, fellows from the program have created Unity Gardens, Inc., a community garden and health network that will have more than 55 gardens by this summer, a new edible landscaping product for a local landscape design company, an original musical composition putting local resident’s thoughts about sustainability to music, and enhanced sustainability programming for the local PBS television station.

Sustainability Studies student Reg Miller (far left, front row) talks over an exercise with a workshop attendee during the “Sustainability and Innovation: The Natural Step to Prosperity” workshop in April 2012.

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The first Sustainability and Innovation Workshop, held at the Marriott in downtown South Bend, IN, featured David Cook, former chief executive of the Natural Step International



Sustainability and Innovation: The Natural Step to Prosperity

We offered our first day-long Sustainability and Innovation workshop in October of 2009. In order to do so, we invited David Cook, then chief executive of The Natural Step International, to come conduct the workshop. Though such workshops typically cost \$175 per person, we were able to obtain enough underwriters to offer it for just \$35. This being the first sustainability workshop offered in our area, coupled with the low cost, led to an enrollment of more than 120 participants.

Given the unexpectedly large number of attendees, David invited Heidi Speight, a graduate of the Strategic Leadership Toward Sustainability Master's Program at the Blekinge Institute of Technology, Sweden, to assist him. The following year, we were able to repeat the workshop, this time with Regina Hauser, the director of The Natural Step Network USA, as our workshop leader, with Mike Keen, our director of the Center for a Sustainable Future to assist her. In 2011, after taking some additional advanced training, we offered the workshop totally in-house through our own staff. This has allowed us to offer the workshop on a more regular basis at the same low cost.

Our workshops are closely based on The Natural Step's introductory workshops. We use slides shared with us by both the international and U.S. offices, as well as some we have developed ourselves. Typically, in the morning, we offer sessions on The Natural Step: Scientific Foundations and System Conditions of Sustainability, and The Natural Step: Strategies for Sustainability Planning and Implementation. During the luncheon, we invite local elected officials to address the gathering, such as a mayor, state representative, or congressional representative. In the afternoon, we try to provide a more local and practical flavor by inviting representatives from local businesses and organizations that are recognized as sustainability leaders to give examples of how they are using sustainability as a platform for innovation and prosperity. We conclude the program with a brainstorming session of next steps and ideas for how we can better serve the local and regional sustainability communities. All workshop participants become members of our Michigan Sustainable Economic and Community Development Network that now numbers more than 550 persons. Perhaps the most distinctive and successful feature of our workshops has been the diversity of participants at each one, with members of the local and regional business and not-for-profit communities, municipal government, and environmental advocates and activists all in the same room working together.

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Given its systematic and scientific foundations, it is surprising that The Natural Step is not more prominently employed in colleges and universities in the United States. Part of this may have to do with the fact that it was developed outside of the academy. In addition, until recently, it largely has been available only through fairly pricey proprietary workshops and consultation from TNS itself, which primarily targeted the corporate world and municipalities.

In the last two years, however, TNS has changed its approach and is moving to make its framework an open source body of knowledge while exploring ways to disseminate the information more generally. This would seem to be a natural step for colleges and universities. At the IU South Bend Center for a Sustainable Future we have found it provides us with the intellectually credible foundations expected of an academic unit in its teaching, research, and

service and civic engagement. In addition, we have found it offers another, unanticipated, benefit: It has allowed us to use it to integrate our efforts with the nonacademic side of the house as it provides as useful a framework for its sustainability efforts as our own. For example, the sustainability efforts on our campus got launched when our TNS reading group approached the campus about getting LEED certification for some newly planned campus housing. The faculty and staff in this group were invited to join the campus architects and facilities office in a design charrette that eventually led to a Silver Certified Community Building at the center of our student residences. Our students, faculty, administrators, staff, and facilities and purchasing offices regularly work together and learn from one another in joint sustainability initiatives. We have all become both teachers and learners as we work to create a more sustainable future both on campus and beyond its boundaries. These combined efforts can enable us and other institutions to be leaders in the sustainability revolution.

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