

SUSTAINING INNER AND OUTER WORLDS: A WHOLE-SYSTEMS APPROACH TO DEVELOPING SUSTAINABLE BUSINESS PRACTICES IN MANAGEMENT

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Sustainability issues are not just "out there" in the external environment. In approaching the issue of sustainability, students benefit from questioning what is it that sustains their own lives, the lives of those they care about, and the organizations in which they work. If encouraged to do this, students become better systems thinkers as they link their external and internal worlds. This article presents some clarification of the concept and practices associated with sustainable development and describes numerous class exercises to help management students move sustainable development into their own sphere of attention and practice.

Keywords: *sustainability; systems thinking; action research; change management; natural environment*

A growing number of leading corporations, especially multinationals, are embracing practices associated with sustainable development. The movement toward sustainable development is one that calls for present needs to be met without reducing the capacity of future generations to meet their own needs (World Commission on Environment and Development, 1987). The

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concept of sustainability comprises a fundamental concern for the natural environment but goes beyond that to acknowledge that the impact of people on the natural environment is so profound that ignoring human and econosocial issues when dealing with sustainability issues really limits effective action. Thus, sustainability comprises a concern for the following three interdependent issues: natural, human, and economic development. In business terms, this means creating organizations that can sustain financial, human-social, and environmental resources over the long term. This requires balancing attention on a "triple bottom line" (Elkington, 1998) rather than maintaining purity of interest in short-term financial health alone.

Sustainable development requires attention to solving both technological issues as well as people issues so that new behaviors can be coordinated for a more sustainable approach. To date, considerably more emphasis has been placed on the technological aspects. My work takes a different and complementary approach, reminding those involved in this work that all change is implemented by people, be it as individuals, groups, organizations, or societies. Our capacity to change our own and others' behavior is often limited. In particular, launching initiatives and maintaining momentum can be a great challenge. Therefore, the premise of this article is that when teaching about the natural environment, or more broadly about sustainability, it is important that students understand that the natural environment and all the issues related to sustainability are not just technical issues "out there." In stressing the external and internal worlds of sustainability, the article makes clear that one needs a so-called "both and" approach to sustainability so that approaching sustainability does not come across as a set of technical problems to be solved but also as an opportunity for revitalizing ourselves in a revitalized economy that exists to serve, rather than exploit, natural and human/social systems.

The purpose of this article is to provide background ideas about sustainability and systems thinking and assistance in applying those ideas with a number of experiential exercises. The contribution of the article lies in providing a conceptual framework that helps integrate rational and emotional material. The article begins by framing the importance of connecting systems thinking and sustainability with an action or experiential approach to learning. It presents a conceptual framework for educators wishing to bring a whole systems orientation to teaching about the natural and social environment in which business operates. It illustrates the usefulness of this framework by describing experiential exercises that can be designed around its insights. The material is suitable in courses on general management, organizational behavior, and strategy.

Capturing Management Students' Interest in the Business of Sustainability

Environmental and sustainability issues are new to many management students. Although one may be pleasantly surprised by students' willingness to engage productively with these issues, it is helpful to assume some healthy skepticism.

Traditionally, it has been thought that environmental expenditures reduce profitability. Moreover, fiduciary responsibility to maximize returns is often believed to preclude consideration of social/ethical issues, such as the environment. Nonetheless, new thinking is emerging to help explain the correlations between healthy stock performance and an organization's stewardship of environmental/sustainability issues (Elkington, 2001; Holliday, 2001; Porter & van der Linde, 1995; Holliday, Schmidheiny, & Watts, 2002). Although this remains a new area in management scholarship, the positive correlation between stock price and sustainable business practice is thought to exist because environmental performance is an excellent proxy for management quality, and management quality is the leading determinant of stock market performance. Having to deal with high levels of uncertainty and multiplicity of complex issues such as stakeholder management and nonfinancial measures builds managerial capacity to handle other business areas well. As such, sustainability issues may be presented as an opportunity for organizational learning par excellence (Bradbury, Carroll, Ehrenfeld, & Senge, 2000).

The business case for sustainability, however, is more than purely financial (Gladwin, Kennelly, & Krause, 1995). A business could become involved in sustainability efforts because it can thereby attract and retain high-caliber people. Furthermore, it retains such employees through sustaining their loyalty and sense of wishing to make a difference in the world. A sustainable enterprise drives creative juices and therefore a resurgence of intrapreneurialism (Senge & Carstadt, 2001). To external stakeholders, it offers image enhancement and encourages agreement to license business to operate over the long term as well as allowing for lower costs of insurance. The latter may explain the great interest of multinationals (e.g., British Petroleum [BP], Shell) who are leaders in the field of sustainable development for its promise of providing sustainable wealth for more stakeholders.

Thus, with some groundwork done in capturing and shaping students' attention, it is possible to proceed to explore a whole systems approach to teaching sustainability.

EXPLAINING THE CONCEPT OF SUSTAINABILITY MORE GENERALLY

For business leaders, the concerns of sustainable development have implied broadening the traditional bottom line to generate financial, environmental, and human-social capital (Elkington, 1998). Concerned organizational leaders who have been seeking to reduce degradation of the natural environment are now building on the benefits of the ecoefficiency movement (e.g., 3M's "Pollution Prevention Pays") and are broadening their vision to encompass concern for sustainable development (Hart, 1997), thereby emphasizing concern for the preservation and generation of healthy human communities as well. The application of concepts of sustainability to business allows us to define sustainable development in dynamic terms as the movement that occurs as a company recognizes its impact on the social and natural systems, owns that impact, and seeks to derive profitable competitive advantage from that impact by creating new products, services, and processes that lessen the impact or even restore original social and natural capitals to generate financial capital.

Sustainable development is not the problem domain of any single organization, but rather of all. Processes leading toward a sustainable end state require the cumulative and aligned efforts of all social and organizational sectors (Starik & Rands, 1995). In process terms, sustainable development is argued to require the collaboration of multiple stakeholders (Roome, 1998) who together can align societal sectors (industry, civic, and political) so that our organizational and societal needs can be met within the carrying capacity of our natural and social ecologies. Sustainable development is a multisystem issue (Starik & Rands, 1995) that requires the wholesale shift in worldview and practice (Gladwin et al., 1995) of all societal stakeholders (Waddock, 1989) and especially of the corporate and business sector (Hawken, 1993; Schmidheiny, 1992). Business leaders of the future, such as MBA students, would do well to become aware of the efforts underway should they work in the supply chain of behemoth organizations whose efforts may help shift whole industrial sectors (e.g., Shell Oil and BP are leading oil companies publicly committed to moving away from a fossil fuel production to a more earth-friendly way of providing energy).

WHOLE SYSTEMS THINKING

I believe that our very survival depends on our becoming better systems thinkers.
Wheatley, 2002, p. 27.

Organizations that sustain a healthy adaptive stance over time manage the larger environment and their salient stakeholders (i.e., the open system in which they operate). A systems approach reminds us that organizational life is full of interdependencies; for example, a new strategic redesign requires all people to pull together in ways they perhaps did not previously. We neglect interdependencies at our peril. On September 11, 2001, the United States realized how the lives of those far away affect our own. Traditionally, however, we are not trained as systems thinkers and we carry with us our earlier education in the more mechanistic logics of simple cause and effect, dealing with isolated units as though unconnected to the larger environment in which they live and die.

System is defined as a grouping of interdependent phenomena with a common focus. *Systems thinking* implies attempts to understand the interdependence of phenomena over time. It requires flexibility. In the face of great complexity, a manager might best give up a belief that command and control is desirable, much less possible. Managers might better begin to try to see how to guide rather than force change, seeking low-hanging fruit, creating coalitions, being creative rather than reactive. Taking a whole systems approach to sustainable development, therefore, means attending to both relevant information about the external world of natural and social systems out there as much as to the individual students' personal and interpersonal world.

Using the distinction of external and internal worlds along with those of personal and multipersonal/global concerns, Figure 1 presents a four-celled matrix that helps organize a set of interdependent concepts and practices that can be useful when teaching about sustainability. This framework, a modified version of the one presented in Bradbury and Lichtenstein (2000), has been inspired by Wilber's (1996) work on integrating external and internal approaches to the study of phenomena. It is influenced also by philosopher of science Mary Midgely (1992) who wrote,

When we talk about the world as a whole, we are indeed necessarily also talking about our own place in it, about the relation we stand in to the rest of it, and about our own powers of dealing with that relation. These things all need to be considered together. (p. 101)

For the sake of clarity, however, they will be presented in a linear format. Therefore, it is important when introducing this material to remind students that each exercise is but a partial approach to the whole systems notion of sustainability.

A course teaching about sustainability would ideally cover all four areas of the matrix. This may be thought of as a general map, in which different cells can inform separate class modules, or they can be used together to create the architecture for an entire curriculum on sustainability. It is most important to keep reinforcing the whole systems approach to sustainability and thereby to locate the work for one class in the bigger picture as plotted by this model.

CELL 1. EXPLORING THE EXTERNAL ORGANIZATIONAL ENVIRONMENT

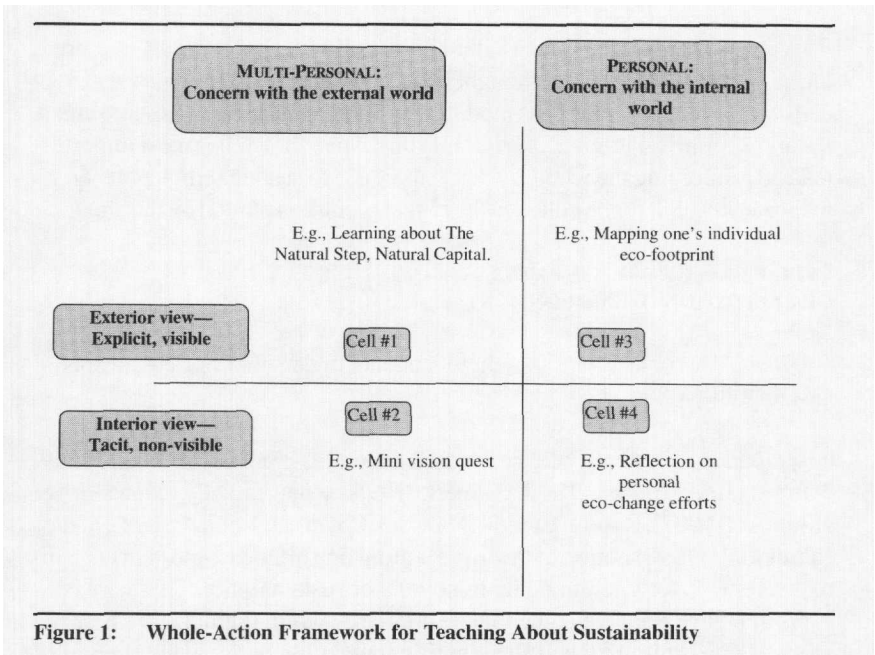
Focus. The object here is to help students understand basic concepts of sustainability.

Activities. The work of The Natural Step (cf. Bradbury & Clair, 1999; Natrass & Altomare, 1999; Robèrt, 1995; Robèrt, Daly, Hawken, & Holmberg, 1997), Natural Capital (Hawken, Lovins, & Lovins, 1999), and/or Elkington's (1998) notion of the triple bottom line offer us important conceptual resources for operationalizing notions of sustainability. These are concepts that have been welcomed in the corporate world. I emphasize here the work of The Natural Step as its scientific foundation has won the support of international scientists. The founder, Dr. Karl Henrik Robèrt, has been awarded the prestigious Blue Planet Prize, a type of environmental Nobel Prize, for his efforts to catalyze this momentum.

Students can be asked to imagine themselves as managers being groomed for leadership of an organization. They then name their organization, or imagine one, along with the product or service the organization provides. They can begin by reflecting on what real needs they are serving (e.g., a petroleum company produces value by providing energy; a car manufacturer by providing transportation). Understanding the real value allows the students to be more flexible about how that need can be met (e.g., the oil company can develop alternative fuels as a niche market).

The professor can then introduce The Natural Step, along with examples of how other business leaders have applied their operationalization of sustainability. Illustrations and mini case studies of its application in the United States can be found especially in the work of Natrass and Altomare (1999). Students should be told that after the introduction, they will be asked to come up with their own interventions/inventions for their company.

At the heart of The Natural Step are its scientifically based sustainability principles. There are four principles, known as the four systems conditions



for sustainability. As explained more in Table 1A, Condition One states that substances extracted from the earth's crust, such as oil and metals, must not systematically increase in nature. Condition Two states that substances produced by society, such as plastic, must not systematically increase in nature. Condition Three states that the physical basis for productivity and diversity of nature, (i.e., green spaces) must not be systematically diminished. And finally, Condition Four states that if we want global sustainability, we must have fair and efficient uses of resources to meet human needs. This is in part to counteract the tendency of those whose needs are not met to engage in practices that are especially destructive to the environment for short-term survival, such as the destruction of the rain forests.

Business executives who partner with The Natural Step have reportedly committed to working toward sustainability using the Four Systems Conditions as a compass to strategic decision making. Table 1B suggests questions to provoke strategic thinking for sustainable development. Students can strategize about reducing the depletion of natural capital while trying to think through the profitability of the strategy (e.g., shifting to alternative fuels to provision the California market, developing organic coffee and charging a higher price, and so forth).

CELL 2: INNER-DIRECTED EXPLORATION OF THE NATURAL WORLD

Focus. Sustaining a sense of personal relationship with the natural world.

Activities. Personal vision quest. A personal vision quest offers students the opportunity to develop direction and clarity in their life. Vision quests (usually attended by fasting) are part of many religious traditions. For example, a weeklong vision quest was a common practice for the American Plains Indians, whereas Muslims observe fasting during Ramadan, and Christians during Lent.

For practical purposes, a much simpler quest is designed here around the time that can be devoted to it, sometimes as little as an hour. Rather than awaiting fully formed visions, the students are instructed to look for simple signs as they walk alone in a green area close to campus. The purpose of the exercise is to allow students to contemplate their place in the world, helped by dialogue with nature. In my experience, students usually enjoy this activity and report intriguing signs. For example, one graduate student considered the issue of how exhausted she was as she walked. Suddenly, she saw an Amish family walk across campus and felt she had received a sign that would finally make her simplify her life.

Students should be invited to go to a place they can walk in for around an hour (ideally a green space near the campus). Once there, they can simply let their intuition be their guide without much need to hurry or to be goal oriented. Students might loosely ponder whatever issue is most salient to them, allowing their mind to drift and watching out for signs. At the end of an hour, students return to journal silently for 10 minutes before sharing with a partner and then the larger class about their experience (see Table 2).

Students may also wish to learn that this type of exercise is used in the corporate world. All the team members in Xerox's LAKES sustainability project were offered the opportunity to partake of a 24-hour vision quest (cf. a case study for more background detail by Bradbury & Ford, 2001). The participants went to a place in the desert, bringing only a water bottle and a journal. Of the roughly two thirds who chose to go, a striking number reported being profoundly changed. For almost all who went, this was the first opportunity they had ever had to really just hear their own voice in an area in which distractions were elemental. The following quotes from Xerox employees may offer students a sense of the spectrum of responses allowed. The instructor might stress that an overwhelming majority had a very positive experience that was later reported to have deeply influenced their unusual levels of engagement and productivity on the project.

TABLE 1A
The Four System Conditions for Sustainability

<i>System Condition One</i>	<i>System Condition Two</i>	<i>System Condition Three</i>	<i>System Condition Four</i>
Substances from the Earth's crust must not systematically increase in the ecosphere.	Substances produced by society must not systematically increase in the ecosphere.	The physical basis for productivity and diversity of nature must not be systematically diminished.	If we want life to go on, we must have fair and efficient use of resources with respect to meeting human needs, because promoting justice will avert the destruction of resources that poor people must engage in for short-term survival (e.g., rainforest).
This means: Fossil fuels, metals, and other minerals must not be extracted at a faster pace than their slow redeposit and reintegration into the Earth's crust.	Substances must not be produced at a faster pace than they can be broken down and integrated into the cycles of nature or deposited into the Earth's crust.	We cannot harvest or manipulate ecosystems in such a way that productive capacity and diversity systematically diminish.	Basic human needs must be met with the most resource-efficient methods possible, and their satisfaction must take precedence over provision of luxuries.
Reason why: Otherwise, the concentration of substances in the ecosphere will increase and reach limits—often unknown—beyond which irreversible changes can occur.	Otherwise, the concentration of substances in the ecosphere will increase and eventually reach limits—often unknown—beyond which irreversible changes occur.	Our health and prosperity depend on the capacity of nature to reconcentrate and restructure wastes into new resources.	Humanity must prosper with a resource metabolism meeting System Conditions One through Three; this is necessary to get the social stability and cooperation for achieving the changes.

TABLE 1B
Questions Posed by the System Conditions

<i>System Condition One</i>	<i>System Condition Two</i>	<i>System Condition Three</i>	<i>System Condition Four</i>
Make a list of the materials that are mined from the Earth's crust and used in your business (e.g., metals, fuels, and other minerals).	Make a list of the unnatural substances your organization is dependent on (e.g., plastics, chemical compounds).	How does your organization depend on activities that encroach on productive parts of nature (e.g., asphaltting green spaces, overfishing)?	How does your organization depend on resources in ways that are out of proportion to the added (human) value (e.g., sending products to the landfill that could be recycled and thereby save the strip mining of a community, creating toilet paper from virgin growth forest and thereby encroaching on the indigenous communities there)?
Moving toward sustainable business practices:			
Identify one way that your organization can systematically decrease its dependence on these materials.	Identify one way that your organization can systematically decrease its dependence on persistent unnatural substances.	Identify one way that your organization can systematically decrease its economic dependence on those activities that encroach on productive parts of nature.	Identify one way that your organization can systematically decrease its economic dependence on using an unnecessarily large amount of resources in relation to added human value.

As a marketing manager remarked,

I had simply never been alone a whole 24 hours like that, ever. You start hearing your inner voice which you don't hear when you're totally wrapped in everything, consumed and bombarded by stimulation. By about 5 in the morning I

TABLE 2
Instructions for a Personal Vision Quest

-
- Get to a place you can walk in for around an hour (ideally a green space).
 - Once there, let your intuition carry you—there is no need to be goal oriented.
 - Loosely ponder whatever issue is most salient to you.
 - Allow your mind to drift.
 - Watch out for signs that seem meaningful.
 - Return to class, where you will journal silently for 10 minutes; during this time, keep writing freely, trying not to lift your pen from the paper.
 - Prepare to share some meaningful reflections with a partner.
-

was writing like crazy in my journal, it was all so clear about some things that I personally had. That was the most refreshing experience. Perhaps secondary to the purpose they sent us, yet oddly helpful in ways that became clearer later.

CELL 3: EXPLORING THE EXTERNAL INDIVIDUAL'S WORLD

Focus. The student is invited to reflect on her/his use of natural resources and the social systems that make them available.

Activities. Mathis Wackernackel and William Rees's (1996) *Our Ecological Footprint*, along with David Orr's book, *Ecological Literacy*, offer particularly useful exercises that ground students in the knowledge of their effects in the world.

Example. Students are invited to individually list all the products in one arena of their lives (their kitchen, bedroom, and so forth). Joining with a few others, they share their insights about the list (this sharing can be powerful if done in conjunction with some facts about the distribution of wealth in the world, e.g., that a majority of people do not have more than one set of clothes). They then choose a common item and, using a flip chart and pens, try to draw its entire life cycle, from cradle to grave. Where more advanced planning is possible, students could use the Internet, for example, to get detailed information about the provenance of their products and the many systems and subproducts that are a part of that (see Table 3).

This is an opportunity to clarify the notion of the "ecological footprint" (Wackernagel & Rees, 1996). The ecological footprint refers to an account of the resource consumption and waste assimilation requirements of a defined set of people (or economy) in terms of the corresponding productive land that

TABLE 3
Building Ecological Awareness of Our Stuff

-
- List all the items in your kitchen or bedroom, and so forth.
 - Compare lists in a group and see which items are most common.
 - Choose one of those common items.
 - For homework, research the life cycle of this item.
 - Draw the cradle-to-grave life cycle of that item on a flip chart.
- What is it made of?
 Where did those items come from originally?
 How/where are they processed?
 Where is oil necessary in the life cycle?
 What elements mentioned in the system conditions are present?
 Is this life cycle efficient?
 Is it fair to all people who are affected by the life cycle?
-

is needed to deliver the resources. One learns, when comparing countries, that the ecofootprint of the average citizen of the United States is about 30 times greater than that of someone in India and 13 times greater than that of someone in the Netherlands. Simple calculations allow students to see that if everyone wished to live like an American, we would need three additional planets for the amount of land required to carry the resource intensity of the U.S. lifestyle. In addition, students can do an analysis of their own footprints—they can quickly see the benefits of walking to school, having a vegetarian lunch, or generally treading more lightly on the planet. This can help make environmentally sensitive decisions in a peer situation that can be considerably enriched if there are international students. More information and a footprint calculator is available at www.bestfootforward.com/footprintlife.htm.

CELL 4: EXPLORING ARENAS OF PERSONAL IMPACT ON THE LARGER SYSTEM

Focus. Here, the focus is on working on a personal ecochange effort and understanding how that effort is linked to affecting the larger system in which we live. As such, it is an opportunity to introduce students to systems thinking and a systematic way of reflecting on learning using soft-systems thinking as an approach.

With systems thinking comes the belief that the world is interdependent (or systemic), with myriad forms of phenomena understood as being emergent and interrelated. Viewing the world as interrelated requires us to use new

TABLE 4
Leading an Ecochange Project

-
-
- Name the ecoissue you have selected.
 - Note why this change is intended to assist in the movement toward sustainability (cf. The Natural Step system conditions).
 - Construct rich pictures with multiple story lines about the issue.
 - How is this issue an ecoissue?
 - What forces have brought this issue into place and keep it there?
 - Imagine and name relevant financial, human-social, and environmental systems in these stories.
 - What explains how the systems might be changed?
 - Draw a conceptual model with boxes and arrows to explain what affects what as you think about effecting a change.
 - Compare this model with the rich pictures you had created previously.
 - Debate the change agenda with all relevant actors to see what can be realistically done.
 - Outline your realistic implementation plan on a timeline; gain the buy-in of the relevant stakeholders.
-

methods for scientific study. Taken into the realm of management (Senge, 1990), systems thinking observes that organizations reside in an open social and natural environment.

Peter Checkland's (1985) general model of systems thinking develops a soft-systems thinking approach. It can help students make explicit the types of interdependencies they sense in any given system (political, human, technical, environmental, and so forth) but without recourse to computer, or so-called hard, simulation that might be a next step for those so inclined.

Activities. Students identify an ecoproject, that is, a place in which they wish to make an environmental improvement. The change effort selected should be intended to move the individual or organization in the direction of sustainability. Improving recycling efforts might be an obvious choice for students. In their efforts to bring about desired change, students learn, or are reminded, about the gap between knowing what we ought to do and actually catalyzing practical efforts that allow us to move into action. Students are helped to see the complexity of organizational life in implementing something that most would agree is a good idea. Their interpersonal and general project skills are tested as they learn that functional skills much be augmented with interpersonal finesse.

Resources. The soft-systems methodology of Checkland (1985) can be very useful here, although other action research processes (Reason & Bradbury, 2001) can also be used. In simple terms, the students choose a change project and then follow the outlined steps. What is particularly good about the Checkland approach is that it encourages creative divergence at first with use of drawing/creative skills and storytelling. Table 4 offers detailed instructions for students in designing their projects.

Summarizing a Holistic Business Case for Sustainability

I have presented a whole-systems approach to teaching about sustainability to help students understand that neither the problems/challenges of the world nor of the natural environment per se are simply "out there." It is important to understand that we as individuals are personally located within the large human and natural systems we seek to manage. The Natural Step and ecological footprinting allow students to learn about "out there," whereas the mini vision quest and efforts to bring about actual eco-change help relate the external world to the students' personal world. Thus, the learning about sustainability combines experience of the world "out there" as well as the personal world "in here."

Research needs to be done on how best to time and sequence the introduction of the various exercises to different populations of students. In my experience, the less management experience students have, the more readily they will engage with materials and exercises concerning the external world. Those with more management experience tend to more readily appreciate the internal world of work. This suggests that one might sequence the exercises after developing a sense for who is in the classroom. Nonetheless, it is always important to underscore that these exercises reflect different approaches to a whole system and that combining external and internal, personal and impersonal approaches assists in the management and development of sustainable enterprises.

Ultimately, all individuals and businesses are completely reliant on the planet and its myriad ecological services. Living at a time when all living systems are in decline, it is both a personal and organizational imperative that we learn to take sustainability issues into account. Luckily, there is also a business case for doing so, a case that will be made stronger by our students as they experiment with sustainable development in their work lives.

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