The Sustainable Human and Environmental Systems (SHES) Approach to Sustainability Education and Practice: The Administrative Challenge

Michael A. Reiter [1*], Richard C. Smardon [2], Paul A. Barresi [3]

[1] Department of Integrated Environmental Science, College of Science, Engineering, and Mathematics,
Bethune-Cookman University, Daytona Beach, FL, U.S.A.
[2] Department of Environmental Studies,
SUNY College of Environmental Science and Forestry,
Syracuse, NY, U.S.A.
[3] Department of Social Sciences, School of Arts, Sciences, and Education,
Southern New Hampshire University, Manchester, NH, U.S.A.
* Corresponding author: reiterm@cookman.edu

Abstract: The adoption of a novel approach to education at any college or university is likely to pose equally novel administrative challenges. In the context of the Sustainable Human and Environmental Systems (SHES) approach to sustainability education and practice, these challenges are likely to fall into three categories: how to support SHES faculty, how to support SHES program design, and how to ensure broader institutional support and recognition for colleges and universities that incorporate the SHES approach into their curricula. The challenge of supporting SHES faculty is likely to play out differently in different types of colleges and universities. In particular, the very high degree of bureaucratization typical of large universities is likely to weigh more heavily on efforts to support SHES faculty than the more flexible institutional environments more common in smaller universities and colleges. Notwithstanding this likely variation, the most important thing that any college or university could do to support SHES faculty is to be explicit about its commitment to the SHES approach to sustainability education and practice. Implementing the SHES approach in the design of degree programs presents at least one crucial design challenge. At its core, the SHES approach to sustainability education and practice is a holistic one. For that reason, it is also supradisciplinary. Yet disciplinarity remains the pedagogical touchstone for the design of degree programs worldwide. Five basic program design models exist, which differ in their perspectives on disciplinarity. Some of these models are more conducive to the implementation of the SHES approach than others. Hovering above the issues of supporting SHES faculty and SHES program design is the challenge of how to ensure broader support for and recognition of colleges and universities that choose to do so. Ideally, that support should come from both inside and outside the institutions in question. The need for external support for and recognition of colleges and universities that embrace the SHES approach to sustainability education and practice is also a pressing one. Although the aspirational goals of the SHES approach are likely to give rise to novel administrative challenges in any college or university, the SHES approach is designed to be universally applicable, regardless of institutional setting or subject matter context, whether by itself or as a complement to educational approaches that colleges and universities are using now. With careful planning, patience, and some creativity, any college or university could become a SHES-friendly institution.

Keywords: Faculty support, institutional support and recognition, program design, sustainability education.

Introduction

The Sustainable Human and Environmental Systems (SHES) approach to sustainability education and practice is the work of the SHES Roundtable, a collaborative forum for college and university faculty and administrators, practitioners, and others from throughout North America and beyond to pursue their commitment to providing students in higher education with the knowledge and skills needed by practitioners and citizens alike to meet the existential sustainability challenges that plague the modern world (see, e.g., Focht, Reiter, Barresi & Smardon, 2019 [1]).[1] The SHES approach rests on seven foundational thematic principles—holism, supradisciplinarity, systems thinking, revealed complexity, social learning, stakeholder engagement, and universal applicability.[2] In accordance with the principle of universal applicability, the SHES approach is designed to be used in any institutional setting or subject matter context. Yet the adoption of a novel approach to education at any college or university is likely to pose equally novel administrative challenges. In the SHES context, these challenges are likely to fall into three categories: how to support SHES faculty, how to support SHES program design, and how to ensure broader institutional support and recognition for colleges and universities that incorporate the SHES approach into their curricula. With careful planning, patience, and some creativity, however, any college or university could become a SHES-friendly institution.

Supporting SHES Faculty

The challenge of supporting SHES faculty is likely to play out differently in different types of colleges and universities. In particular, the very high degree of bureaucratization typical of large universities is likely to weigh more heavily on efforts to support SHES faculty than the more flexible institutional environments more common in smaller universities and colleges (cf. Pfirman, Smardon & Reiter, 2019 [2]; Reiter et al., 2011, pp. 73–74 [3]; Reiter & Smardon, 2019, p. 236 [4]). This extreme bureaucratization usually extends to academic departments, at least in the United States, which can be sealed off almost hermetically from each other. In the SHES context, the number and rigidity of institutional boundaries in highly bureaucratized environments is likely to have implications across a broad range of faculty support issues. Planning and implementing the recruitment of SHES faculty is likely to be harder in highly bureaucratized environments because of the need for coordination among many departments, divisions, or even schools (see Pfirman, Smardon & Reiter, 2019, pp. 218–19 [2]). The mentoring of SHES faculty is also likely to be a challenge, especially in the first few years after adopting the SHES approach, because of the absence of senior faculty members with similar supradisciplinary interests and skills (Pfirman, Smardon & Reiter, 2019, p. 219 [2]). For the same reason, creating appropriate promotion and tenure tracks for SHES faculty is likely to raise novel issues, regardless of the mix of scholarship, teaching, and service formally used as evaluation criteria. In the absence of senior SHES faculty, junior SHES faculty are likely to have to work much harder to convince their much more conventional colleagues of the merits of scholarship, teaching, and service unconstrained by disciplinary boundaries (Pfirman, Smardon & Reiter, 2019, pp. 221–22 [2]). The institutional and cultural milieu of any college or university is unique, which means that the most viable strategies for meeting the challenge of supporting SHES faculty are likely to vary widely across the academy. Notwithstanding this likely variation, the most important thing that any college or university could do to support SHES faculty is to be explicit about its commitment to the SHES approach to sustainability education and practice (Pfirman, Smardon & Reiter, 2019, pp. 222–23 [2]). One way of demonstrating this commitment, at least in general terms, is by lodging sustainability-focused degree programs in their own department or higher-order administrative unit with a dedicated budget (see, e.g., Mulkey, Smardon & Reiter, 2019, pp. 241–42 [5]). Without an explicit commitment of this type, meeting the challenge of supporting SHES faculty is likely to be a much more formidable task.

Supporting SHES Program Design

Implementing the SHES approach to sustainability education and practice in the design of degree programs, whether as their sole pedagogical theme or as a complement to one or more other pedagogical themes, presents at least one crucial design challenge. At its core, the SHES approach to sustainability education and practice is a holistic one. For that reason, it is also supradisciplinary. Yet disciplinarity remains the pedagogical touchstone for the design of degree programs worldwide, although sometimes mostly as a foil for highlighting the program's own efforts to reduce or to
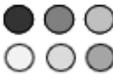
---

[1] For more on the history of the SHES Roundtable, see the SHES article on *Foundational Thematic Principles* in this issue of the *OIDA International Journal of Sustainable Development*.
[2] For more on these principles, see the SHES article on *Foundational Thematic Principles* in this issue of the *OIDA International Journal of Sustainable Development*.

overcome the reductionism inherent in discipline-dependent thinking. Five basic program design models exist (see Figure 1).

Some of these models are more conducive to implementation of the SHES approach than others (see Reiter et al., 2012, pp. 111–12 [7]; see also Reiter et al., 2011, pp. 64 – 65 [3]; Reiter & Smardon, 2019, pp. 229–30 [4]; Barresi et al., 2015, p. 501 Table 1 [6]). *Unidisciplinary* programs, such as programs in history or geology, view their subject matter primarily from a single discipline's perspective. *Multidisciplinary* programs, such as environmental studies programs made up of unidisciplinary courses in the natural sciences, social sciences, and humanities, invoke many disciplinary perspectives applied separately. *Transdisciplinary* programs, such as programs in geophysics or historical archeology, recognize points of intersection among otherwise separate disciplines. *Pluridisciplinary* programs, such as programs in cultural psychology, recognize some overlap among disciplines but preserve the distinctions among them. *Interdisciplinary* programs, such as programs in ecology or integrated environmental science or studies, view their subject matter from a perspective synthesized from

Figure 1: Program Disciplinarity and its implications for implementation of the SHES approach to sustainability education and practice

PROGRAM DISCIPLINARITY	CONNOTATION	SYMBOL	DISCIPLINARY PERSPECTIVE	EXAMPLE	IMPLICATION FOR IMPLEMENTATION OF THE SHES APPROACH
Unidisciplinary	One, single, alone		Views sustainability from a single discipline's perspective	Geology	Not conducive
Multidisciplinary	Many, several		Invokes many disciplinary perspectives applied separately	Chemistry + Biology + Geology + Philosophy + History + Political Science (as in some Environmental Studies programs)	Not conducive
Transdisciplinary	Across		Recognizes points of intersection among otherwise separate disciplines	Geophysics, Historical Archeology	Not conducive
Pluridisciplinary	Belonging to many		Recognizes some overlap among disciplines but preserves the distinctions among them	Cultural Psychology	Moderately conducive
Interdisciplinary	Among		Views sustainability from a perspective synthesized from multiple disciplines but applied as a coherent whole	Ecology, Integrated Environmental Science or Studies	Highly conducive
Supradisciplinary	Above, over beyond		Transcends disciplinary boundaries entirely	Sustainability	Most conducive

Source: Adapted from Barresi et al., 2019, p. 501 Table 1 [6]. See also Reiter et al. 2011, 2019, p. 65 Figure 1 [3]; Reiter et al, 2012, p. 112 Figure 2 [7]. Cf. Reiter & Smardon, 2019, p. 230 Figure 15.1 [4].

more than one discipline but applied as a coherent whole. It is hard to imagine how the SHES approach to sustainability education and practice could be implemented in a unidisciplinary, multidisciplinary, or transdisciplinary program, even at the course level. Pluridisciplinary programs are likely to be more conducive to the implementation of the SHES approach at the course level but not at the program level. Accordingly, pluridisciplinary programs are likely to be most valuable from a SHES perspective as potential steppingstones to a more conducive programmatic setting. Interdisciplinary programs are likely to offer much better opportunities for implementing the SHES approach to sustainability education and practice at both the course level and the program level. Interdisciplinarity is not supradisciplinarity, however, which implies at least some uncertainty about whether even students in interdisciplinary degree programs that include some SHES courses could achieve supradisciplinary SHES competencies at the program level.

The uncertainty about whether even students in interdisciplinary degree programs that include some SHES courses could achieve supradisciplinary SHES competencies at the program level raises the question of how degree programs with some SHES content could be structured to maximize the likelihood that students could achieve those competencies (see generally Smardon, Barresi & Reiter, 2019, pp. 122–34 [8]). The SHES Roundtable evaluated the suitability of five existing or potential program structures in that regard (see Figure 2).

Figure 2: Program structure and their implications for implementation of the SHES approach to sustainability education and practice

PROGRAM STRUCTURE	STRUCTURAL PERSPECTIVE	SYMBOL	IMPLICATION FOR IMPLEMENTATION OF THE SHES APPROACH
Conical	Broad but then narrow		Least conducive
Inverted Conical	Narrow but then broad		Least conducive
Double Conical	Narrow but then broad but then narrow (e.g., through the specialized application of knowledge and skills in a capstone course)		More conducive
Hourglass	Broad but then narrow but then broad (e.g., through the synthesis of knowledge and skills in an integrative capstone course)		More conducive
Expansional	Simple to complex but always broad		Most conducive

Source: Adapted from Barresi et al., 2015, p. 503 Table 3 [6]. Cf. Reiter et al., 2011, p. 72 Figure 5 [3]; Reiter & Smardon, 2019, p. 233 Figure 15.2 [4]; Reiter et al., 2012, p. 114 Figure 3 [7].

The SHES Roundtable concluded that some structures are likely to be much more effective than others (see Reiter & Smardon, 2019, pp. 233–34 [4]). The first type of program is structured like a cone, offering students a broad perspective on the subject matter at first but then a narrow perspective later on. The second type is structured like an inverted cone, offering students a narrow perspective on the subject matter at first but then a broad perspective later on. The third type is structured like a double cone, offering students a narrow perspective on the subject matter at first but then a broad perspective in the middle of the program and finally a narrow one again at the end. The fourth type is structured like an hourglass, offering students a broad perspective on the subject matter at first but then a narrow perspective in the middle of the program and finally a broad one again at the end as the program requires students to synthesize what they have learned along the way. The fifth type is structured like an expanding sphere, offering students a broad but simple perspective on the subject matter at first and then gradually adding complexity to that perspective while always maintaining its breadth (see Reiter et al., 2012, pp. 113–14 [7]; cf. Reiter & Smardon, 2019, p. 235 [4]). Programs structured like cones or inverted cones are not likely to enable students to achieve

supradisciplinary SHES competencies at the program level. Programs structured like double cones or hourglasses are more likely to enable students to do so and could be used in otherwise traditional university departments. Programs structured like an expanding sphere offer the greatest prospects for success in achieving SHES competencies. Those programs would be such a radical departure from the current norm, however, that they would be likely to raise formidable program design, course delivery, and graduate marketing challenges at most institutions, at least over the short term (see Reiter & Smardon, 2019, p. 234 [4]). Over the longer term, however, they are likely to offer equally impressive opportunities.

Broader Institutional Support and Recognition for the SHES Approach

Hovering above the issues of supporting SHES faculty and SHES program design is the challenge of how to ensure broader support for and recognition of colleges and universities that choose this SHES-friendly path. Ideally, that support should come from both inside and outside the institutions in question. Five internal institutional imperatives stand out in that regard (cf. Mulkey, Smardon & Reiter, 2029, p. 246 [5]). The first is the need for colleges and universities to be more open to holistic approaches to sustainability education. The experiences of societies worldwide have made clear that reductionist perspectives on sustainability—such as those inherent in discipline-dependent approaches to sustainability education—are ill-suited to the task of transforming unsustainable societies into sustainable ones.[3] The second imperative is the need for colleges and universities to recognize on an institution-wide basis that cultural insights—historically drawn from the humanities and social sciences—have a crucial role to play in transforming unsustainable societies into sustainable ones. Without the benefit of these insights, it is not possible for anyone to grasp in a holistic way how human societies have become so unsustainable worldwide or how we can transform those societies. The third imperative is for the institution's leaders to embrace the vision of colleges and universities as institutions that must be dedicated wholeheartedly and comprehensively to the transformation of unsustainable societies into sustainable ones through teaching, learning, research, and outreach. Reducing campus operating costs in ways that happen to nibble around the edges of an institution's ecological footprint is not enough. The fourth imperative is for the governing bodies of colleges and universities—whether public or private—to interpret their fiduciary responsibilities holistically enough to embrace the full range of current and potential impacts of the institution on the sustainability of the society in which that institution is embedded. From managing its investment portfolio to ensuring that academic programs are ethically conceived, developed, and delivered, the governing body of every college and university must carry out its fiduciary duties with the sustainability of the society in mind. The fifth imperative is the rationalization of the allocation of scarce resources within colleges and universities in the light of this holistic fiduciary duty. Allocations made in the service of short-term returns on investments are not only inconsistent with this fiduciary duty but also increasingly ineffective in the face of the pace at which the educational and employment marketplaces are changing. Allocating resources in a way invariably calculated to promote the sustainability of the society in which the college or university is embedded is much more likely to redound to the benefit of all stakeholders both inside and outside the institution.

The need for external support for and recognition of colleges and universities that embrace the SHES approach to sustainability education and practice is also a pressing one (see Mulkey, Smardon & Reiter, 2019, pp. 247–48 [5]). The Sustainability Tracking and Rating System (STARS) of the Association for the Advancement of Sustainability in Higher Education (AASHE) [9], which awards points for sustainability in administration, the physical plant, and curriculum, offers whole institutions a means of recognition at various achievement levels (see also Mulkey, Smardon & Reiter, 2019, p. 247 [5]). The networking opportunities available to AASHE members also provide a means of support. Kappa Alpha Omicron [10], the Interdisciplinary Environmental Association's honor society for students enrolled in interdisciplinary environmental science and studies programs at colleges and universities around the world, offers those students both recognition and an external support network not available in discipline-based honor societies (see generally Mulkey, Smardon & Reiter, 2019, p. 248 [5]). Opportunities for support and recognition of specific relevance to the SHES approach to sustainability education and practice would be even better.

Conclusion

There is no higher calling for colleges and universities than to contribute in a holistic way to the transformation of the societies in which those institutions are embedded from unsustainable societies into sustainable ones. The SHES approach to sustainability education and practice can be an invaluable tool in helping colleges and universities to fulfill this calling. The aspirational goals of the SHES approach are likely to give rise to novel administrative

---

[3] For more on this point, see the SHES article on *Foundational Thematic Principles* in this issue of the *OIDA International Journal of Sustainable Development*.

challenges in any college or university. Yet the SHES approach is designed to be universally applicable, regardless of institutional setting or subject matter context, whether by itself or as a complement to educational approaches that colleges and universities are using now. Thus, the SHES approach is flexible enough to enable its proponents to capitalize on the opportunities for implementation that currently exist at any college or university while highlighting what will need to be done to overcome any institutional constraints.

Acknowledgements

References

1. Focht, W., Reiter, M. A., Barresi, P. A., & Smardon, R. C. (Eds.). (2019). *Education for Sustainable Human and Environmental Systems: From Theory to Practice*. Abingdon, UK: Routledge.

2. Pfirman, S., Smardon, R. C., & Reiter, M. A. (2019). Supporting Sustainable Human and Environmental Systems Faculty. In W. Focht, M. A. Reiter, P. A. Barresi & R. C. Smardon (Eds.), *Education for Sustainable Human and Environmental Systems: From Theory to Practice* (pp. 216–227). Abingdon, UK: Routledge.

3. Reiter, M. A., Focht, W. J., Barresi, P. A., Bumpous, S., Smardon, R. C., & Reiter, K. D. (2011). Making Education for Sustainability Work on Your Campus: The Roundtables on Environmental Systems and Sustainability. In W. Leal Filho (Ed.), *Umweltbildung, Umweltkommunikation und Nachhaltigkeit [Environmental Education, Communication and Sustainability]: Vol. 32. World Trends in Education for Sustainable Development* (pp. 61–76). Frankfurt am Main, Germany: Peter Lang Scientific.

4. Reiter, M. A., & Smardon, R. C. (2019). Supporting Curriculum and Program Design. In W. Focht, M. A. Reiter, P. A. Barresi & R. C. Smardon (Eds.), *Education for Sustainable Human and Environmental Systems: From Theory to Practice* (pp. 228–238). Abingdon, UK: Routledge.

5. Mulkey, S. S., Smardon, R. C., & Reiter, M. A. (2019). Model Structures for Institutional Support and Recognition. In W. Focht, M. A. Reiter, P. A. Barresi & R. C. Smardon (Eds.), *Education for Sustainable Human and Environmental Systems: From Theory to Practice* (pp. 240–250). Abingdon, UK: Routledge.

6. Barresi, P. A., Focht, W. J., Reiter, M. A., Smardon, R. C., Humphreys, M., Reiter, K. D., & Kolmes, S. A. (2015). Revealing Complexity in Educating for Sustainability: An Update on the Work of the Roundtable on Environment and Sustainability. In W. Leal Filho, U. Azeiteiro, S. Caeiro & F. Alves (Eds.), *World Sustainability Series: Integrating Sustainability Thinking in Science and Engineering Curricula: Innovative Approaches, Methods and Tools* (pp. 497–512). Berlin, Germany: Springer.

7. Reiter, M. A., Focht, W. J., Barresi, P. A., Gill, S., Smardon, R. C., Baker, S. L., Reiter, K. D., Fitch, E., Rolfe, T., & Bumpous, S. (2012). Making Education for Sustainability Work on Campus: The Proposals of the Roundtable on Environmental Systems and Sustainability. In W. Leal Filho (Ed.), *Umweltbildung, Umweltkommunikation und Nachhaltigkeit [Environmental Education, Communication and Sustainability]: Vol. 33. Sustainable Development at Universities: New Horizons* (pp. 109–116). Frankfurt am Main, Germany: Peter Lang Scientific.

8. Smardon, R. C., Barresi, P. A., & Reiter, M. A. (2019). Essential Learning Outcomes. In W. Focht, M. A. Reiter, P.A. Barresi & R. C. Smardon (Eds.), *Education for Sustainable Human and Environmental Systems: From Theory to Practice* (pp. 122–134). Abingdon, UK: Routledge.

9. Association for the Advancement of Sustainability in Higher Education. (n.d.). *The Sustainability Tracking, Assessment & Rating System*. Retrieved August 6, 2025, from https://stars.aashe.org/

10. Interdisciplinary Environmental Association. (2024). *Kappa Alpha Omicron*. Retrieved August 9, 2025, from https://www.ieaonline.org/kao

11. Barresi, P. A., Reiter, M. A., and Smardon, R. C. (2022). The Sustainable Human and Environmental Systems Approach to Sustainability Education: Foundational Principles, Pedagogical Strategies, and Administrative Considerations. *OIDA International Journal of Sustainable Development, 15,* 11–22.