The Sustainable Human and Environmental Systems (SHES) Approach to Sustainability Education and Practice: Program Evaluation, Transformation, and Recognition

Paul A. Barresi [1*], Michael A. Reiter [2], Richard C. Smardon [3], Kimberly D. Reiter [4]
[1] Department of Social Sciences, School of Arts, Sciences, and Education,
Southern New Hampshire University, Manchester, NH, U.S.A.
[2] Department of Integrated Environmental Science, College of Science, Engineering, and Mathematics,
Bethune-Cookman University, Daytona Beach, FL, U.S.A.
[3] Department of Environmental Studies,
SUNY College of Environmental Science and Forestry, Syracuse, NY, USA
[4] Department of History, College of Arts and Sciences, Stetson University, DeLand, FL, U.S.A.
[*] Corresponding author: p.barresi@snhu.edu

Abstract: The Sustainable Human and Environmental Systems (SHES) approach to sustainability education and practice embraces the education of students, practitioners, and whole societies as a prerequisite for transforming unsustainable societies into sustainable ones. Yet the SHES approach is not just a conception of sustainability education. It is also a cognitive strategy—in two senses. First, it is a cognitive strategy for acquiring essential competencies though the use of certain holistic thinking strategies in the context of the steps of the approach. Second, it is a cognitive strategy for diagnosing, prescribing, and implementing sustainable responses to the challenges posed by situations that are inconsistent with a sustainable society. As this multi-pronged focus suggests, the SHES approach to sustainability education and practice has many novel features, among which are the fundamental features that set the SHES approach apart from the educational approaches on which existing sustainability-focused degree programs typically rest. Similarly, the administrative settings in which these existing programs were designed and are delivered often diverge in ways large and small from the administrative setting in which SHES programs are most likely to thrive. Sustainability-focused degree programs that have not embraced the SHES approach could provide students with some of the competencies that the SHES approach regards as essential but are highly unlikely to provide students with others—the ones that students need to engage in holistic thinking (especially but not exclusively systems thinking) to reveal complexity holistically in a stepwise fashion. The extent to which sustainability-focused degree programs that have not embraced the SHES approach rely on the pedagogical strategies that the SHES approach regards as essential is likely to vary as well. These discrepancies between sustainability-focused degree programs as they are and the SHES ideal highlights the need for tools that proponents of the SHES approach could use in evaluating existing programs, charting strategic pathways for transforming existing programs along SHES lines or building new SHES programs from scratch, and recognizing progress in either regard as it occurs. This article offers three rubrics for use in doing so.

Keywords: Program assessment, program evaluation, program recognition, program transformation, sustainability education.

Introduction

T he Sustainable Human and Environmental Systems (SHES) approach to sustainability education and practice, which is the work of the SHES Roundtable,[1] is a living set of recommendations concerning the pedagogy and administration of interdisciplinary and higher-order, sustainability-focused degree programs in higher education and their implications for sustainability practice. It embraces the education of students, practitioners, and whole societies as a prerequisite for transforming unsustainable societies into sustainable ones (cf. Focht & Barresi, 2019, p. 62 [1]). Yet the SHES approach is not just a conception of sustainability education. It is also a cognitive strategy—in two senses. First, it is a cognitive strategy for acquiring essential competencies through the use of certain holistic thinking strategies in the context of the steps of the SHES approach. Second, it is a cognitive strategy for diagnosing, prescribing, and implementing sustainable responses to the challenges posed by situations that are inconsistent with a sustainable society. It is as a cognitive strategy in both senses that the SHES approach to sustainability education and practice is for use both with students in the classroom and by practitioners in the field.[2]

As its multi-pronged focus suggests, the SHES approach to sustainability education and practice has many novel features. Among them are a vision, a mission, and a strategic goal. The essence of the SHES vision is a world of sustainable societies. The essence of the SHES mission is to sustain the viability of the human and environmental systems and interactions among those systems on which the realization of the vision depends. The essence of the SHES strategic goal is to bring about and to sustain the types of social learning needed to fulfill the mission. Social learning in this context is a society-wide process in which individuals learn from each other and behave in ways calculated to transform unsustainable societies into sustainable ones and to maintain them as such. The SHES approach rests on seven foundational thematic principles: holism, supradisciplinarity, systems thinking, revealed complexity, social learning, stakeholder engagement, and universal applicability. Its signature feature is the use of holistic thinking (especially but not exclusively systems thinking) to reveal complexity holistically in a stepwise fashion as an alternative to the use of reductionist thinking (especially but not exclusively discipline-dependent thinking, including interdisciplinary thinking) to engage in analysis. Several of these fundamental features set the SHES approach apart from the educational approaches on which sustainability-focused degree programs at colleges and universities typically rest.[3] Similarly, the administrative settings in which existing programs were designed and are delivered often diverge from the administrative settings in which SHES programs are most likely to thrive. Almost from the start, the SHES Roundtable intended the SHES approach to be universally applicable, regardless of institutional setting or subject matter context (see Reiter et al., 2011, pp. 61, 66, 70, 73 [2]; Reiter et al., 2012, pp. 109, 113, 116 [3]; Reiter & Smardon, 2019, pp. 232, 236 [4]). Yet some administrative settings are likely to be more SHES-friendly than others. The novel administrative challenges faced by proponents of the SHES approach 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.[4] These challenges could be large or small at college or universities, depending on the gap between the administrative settings as they are and the administrative setting in which SHES programs are most likely to thrive. The extent to which sustainability-focused degree programs that have not embraced the SHES approach happen to enable students to acquire the competencies that the SHES approach regards as essential is likely to vary just as much. These essential competencies are of ten general types: holistic thinking; systems thinking; supradisciplinary thinking; complexity thinking; future thinking; adaptive thinking; diversity thinking; collaboration; stakeholder engagement; and project planning, implementation, and outcomes evaluation.[5] Sustainability-focused degree programs that have not embraced the SHES approach could provide students with some of these competencies—especially the ones that are compatible with the use of reductionist thinking (especially but not exclusively discipline-dependent thinking, including interdisciplinary thinking) to engage in analysis. Conversely, these existing programs are highly unlikely to provide

---

[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 the SHES approach as a cognitive strategy, see the SHES article on *The Pedagogical Challenge* in this issue of the *OIDA International Journal of Sustainable Development*.

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

[4] For more on how to meet these administrative challenges, see the SHES article on *The Administrative Challenge* in this issue of the *OIDA International Journal of Sustainable Development*.

[5] For more on these competencies and their roles in the SHES approach, see the SHES article on *The Pedagogical Challenge*, Figures 1 and 2, and the accompanying text in this issue of the *OIDA International Journal of Sustainable Development*.

students with the competencies that students need to engage in holistic thinking (especially but not exclusively systems thinking) to reveal complexity holistically in a stepwise fashion. The SHES approach regards certain pedagogical strategies—competency-based education, backward design, the flipped classroom, and project-based education—as essential to students' acquisition of the SHES essential competencies.[6] The extent to which these strategies have penetrated higher education varies from strategy to strategy. Accordingly, the extent to which sustainability-focused degree programs that have not embraced the SHES approach rely on those strategies is likely to vary as well.

These discrepancies between sustainability-focused degree programs as they are and the SHES ideal highlights the need for tools that proponents of the SHES approach could use in evaluating existing programs, charting strategic pathways for transforming existing programs along SHES lines or building new SHES programs from scratch, and recognizing progress in either regard as it occurs. This article offers three assessment rubrics for use in doing so. These rubrics focus on SHES-friendly program administrative and design attributes, acquisition of the SHES essential competencies as a feature of program design, and implementation of the SHES approach as a cognitive strategy as a feature of program design. Each rubric can be used in at least three ways. First, each rubric can be used to evaluate the extent to which an existing program approximates the SHES ideal, even if the existing program was not designed as a SHES program. Second, each rubric can be used to chart a strategic pathway for either transforming an existing program along SHES lines or building a SHES program from scratch. Third, each rubric can be used to recognize how closely the result corresponds to the SHES ideal. Thus, these rubrics are designed to perform many of the same functions as the Sustainability Tracking, Rating & Assessment System (STARS) of the Association for the Advancement of Sustainability in Higher Education (AASHE) (Association for the Advancement of Sustainability in Higher Education, n.d. [5]) and the Assessment Instrument for Sustainability in Higher Education (AISHE) developed by the Dutch Foundation for Sustainable Higher Education (DHO) (The Platform for Sustainable Performance in Education, 2025 [6]) but without the need for an external supervisory body or a formal certification process. At least two of the rubrics can be used for other useful purposes as well.

Assessing SHES-Friendly Program Administrative and Design Attributes

The rubric in Figure 1 is for use in assessing certain administrative and design attributes of programs as a prerequisite for implementing the SHES approach in the context of an existing program or building a SHES program from scratch.[7] As Figure 1 shows, the programs that are the least conducive to implementation of the SHES approach have the following administrative attributes: (1) no program location because there is no degree program; (2) no program budget support: (3) no interdisciplinary or higher-order faculty; (4) no SHES-specific faculty mentoring; and (5) no SHES-specific promotion or tenure guidelines or policies. The programs that are the most conducive to implementation of the SHES approach have the following administrative attributes: (1) a program with its own department or higher-order administrative unit; (2) dedicated institutional program budget support; (3) a majority of interdisciplinary or higher-order faculty; (4) mentoring of junior SHES faculty by only senior SHES faculty; and (5) SHES-specific promotion or tenure guidelines or policies. Between these extremes lie an array of intermediate possibilities. Existing programs are likely to vary widely in the extent to which they approach the SHES ideal regarding program location, program budgeting, and faculty recruitment. With respect to faculty mentoring and faculty promotion and tenure, however, existing programs are likely to score no higher than the "No Evidence" benchmark. It is with respect to these two attribute categories that proponents of the SHES approach are likely to have the most work to do in their efforts to transform existing programs into SHES programs or to build SHES programs from scratch.

---

[6] For more on these pedagogical strategies, see the SHES article on *The Pedagogical Challenge* in this issue of the *OIDA International Journal of Sustainable Development*.

[7] For more on these attributes, see the SHES article on *The Administrative Challenge* in this issue of the *OIDA International Journal of Sustainable Development*.

Figure 1. A rubric for assessing certain administrative and design attributes of programs as a prerequisite for implementing the SHES approach in the context of an existing program or building a SHES program from scratch

	ATTRIBUTE CATEGORY	SHES-FRIENDLY PROGRAM ADMINISTRATIVE AND DESIGN ATTRIBUTES			
		NO EVIDENCE	BEGINNING	DEVELOPING	ACCOMPLISHED
ADMINISTRATIVE ATTRIBUTES	Program Location	No location because there is no degree program	Degree program shared by more than one administrative unit	Degree program embedded within another administrative unit	Degree program with its own department or higher-order administrative unit
	Program Budgeting	No budget support	Non-institutional funding support only	Some indirect institutional budget support	Dedicated institutional budget support
	Faculty Recruitment	No interdisciplinary or higher-order faculty	A minority of interdisciplinary or higher-order faculty	A majority of interdisciplinary or higher-order faculty	A majority of interdisciplinary or higher-order faculty, including the unit leader
	Faculty Mentoring	No SHES-specific faculty mentoring	Mentoring of junior SHES faculty by non-SHES senior faculty	Mentoring of junior SHES faculty by both SHES and non-SHES senior faculty	Mentoring of junior SHES faculty by only senior SHES faculty
	Faculty Promotion and Tenure	No SHES-specific promotion or tenure guidelines or policies	One SHES-specific factor considered in otherwise non-SHES-specific promotion or tenure guidelines or policies	More than one SHES-specific factor considered in otherwise non-SHES-specific promotion or tenure guidelines or policies	SHES-specific promotion or tenure guidelines or policies
DESIGN ATTRIBUTES	Program Disciplinarity	Unidisciplinary, multidisciplinary, or transdisciplinary	Pluridisciplinary	Interdisciplinary	Supradisciplinary
	Program Structure	Conical or inverted conical	Double conical	Hourglass	Expansional
	Course Design	No courses are competency-based, backward design–based, flipped classroom–based, or project-based	Some courses are competency-based, backward design–based, flipped classroom–based, *or* project-based	At least one course is competency-based, backward design–based, flipped classroom–based, *and* project-based	Most courses are competency-based, backward design–based, flipped classroom–based, *and* project-based

The programs that are the least conducive to implementation of the SHES approach have the following design attributes: (1) a unidisciplinary, multidisciplinary, or transdisciplinary design; (2) a conical or inverted conical structure, which either offers students a broad perspective on the subject matter at first but then a narrow perspective later on or vice versa; and (3) no courses that are competency-based, backward design–based, flipped classroom–based, or project-based. The programs that are the most conducive to implementation of the SHES approach have the following design attributes: (1) a supradisciplinary design, which transcends disciplinary boundaries entirely; (2) an expansional structure, which offers students a broad but simple perspective on the subject matter at first and then gradually adds complexity to that perspective while always maintaining its breadth; and (3) most courses are competency-based, backward design–based, flipped classroom–based, and project-based. Between these extremes lie an array of intermediate possibilities. Although existing programs are likely to vary widely in the extent to which they approach the SHES ideal, few if any of them are likely to have achieved the "Accomplished" benchmark for any of the design attributes.

Assessing Acquisition of the SHES Essential Competencies as a Feature of Program Design

The rubric in Figure 2 can be used to assess the extent to which a program has been designed to enable students to acquire the SHES essential competencies.[8] When used in this way, the rubric in Figure 2 complements the rubric in Figure 1. The rubric in Figure 1 focuses on how conducive a given program's administration and design are to the implementation of the SHES approach. The rubric in Figure 2 is for use in assessing a crucial aspect of the implementation process.

As Figure 2 shows, the SHES essential competencies fall into three functional categories: Signature Competencies, Other Cognitive Competencies, and Other Competencies. The Signature Competencies are essential competencies because they are explicit in the signature feature of the SHES approach, which is the use of holistic thinking (especially but not exclusively systems thinking) to reveal complexity holistically in a stepwise fashion as an alternative to the use of reductionist thinking (especially but not exclusively discipline-dependent thinking, including interdisciplinary thinking) to engage in analysis. The Other Cognitive Competencies are essential competencies because they are implicit in the SHES approach as a cognitive strategy. The Other Competencies are not cognitive competencies but are essential nonetheless because they are otherwise implicit in one or more fundamental features of the SHES approach, such as its strategic goal of bringing about and sustaining certain types of social learning.[9] To correspond to the SHES ideal, a program must be designed to enable students to acquire all the SHES essential competencies at the highest—or "Accomplished"—level of proficiency. Programs designed merely to enable students to acquire some or all of the essential competencies at lower levels of proficiency correspond less closely to the SHES ideal. It is with respect to the Signature Competencies that proponents of the SHES approach are likely to have

---

[8] For an introduction to what it means to demonstrate these competencies at the highest level of proficiency, as well as how certain pedagogical strategies are relevant to students' acquisition of the competencies, see the SHES article on *The Pedagogical Challenge* in this issue of the *OIDA International Journal of Sustainable Development*.
[9] For more on why these functional categories of SHES competencies are essential, see the SHES article on *The Pedagogical Challenge* in this issue of the *OIDA International Journal of Sustainable Development*.

Figure 2: A rubric for assessing acquisition of the SHES essential competencies as a feature of program design

FUNCTIONAL CATEGORIES	GENERAL TYPE	SHES ESSENTIAL COMPETENCIES			
		NO EVIDENCE	BEGINNING	DEVELOPING	ACCOMPLISHED
SIGNATURE COMPETENCIES	**Holistic Thinking**	Cannot distinguish parts from a whole	Can identify some parts and interactions within a whole	Can identify how the relationships or interactions of the parts of a whole contribute to the whole	Can identify how the complex relationships and interactions of the parts of a whole constitute the whole
	Systems Thinking	Cannot identify systems conceptually	Can distinguish systems from non-systems based on their properties	Can resolve a system conceptually into a network of interacting subsystems or can synthesize conceptually from a network of interacting systems a more inclusive supersystem	Can resolve a system conceptually into a network of interacting subsystems and can synthesize conceptually from a network of interacting systems a more inclusive supersystem
	Supradisciplinary Thinking	Cannot describe and cannot explain phenomena without using discipline-dependent theories or methods	Can describe or can explain simple phenomena using one but not the other of discipline-dependent theories or discipline-dependent methods	Can describe and can explain simple phenomena using neither discipline-dependent theories nor discipline-dependent methods	Can describe and can explain complex phenomena using neither discipline-dependent theories nor discipline-dependent methods
	Complexity Thinking	Cannot distinguish between more and less complex situations that are inconsistent with a sustainable society or between more and less complex sustainable alternatives to those situations	Can distinguish either qualitatively or quantitatively between some complex situations that are inconsistent with a sustainable society or between some complex sustainable alternatives to those situations	Can distinguish either qualitatively or quantitatively between more and less complex situations that are inconsistent with a sustainable society and between more and less complex sustainable alternatives to those situations	Can distinguish both qualitatively and quantitatively between more and less complex situations that are inconsistent with a sustainable society and between more and less sustainable alternatives to those situations
OTHER COGNITIVE COMPETENCIES	**Future Thinking**	Cannot envision alternative futures or pathways to those futures	Can describe either forecasting or backcasting as a strategy for envisioning alternative futures and pathways to those futures	Can envision alternative futures and pathways to those futures using either backcasting or forecasting	Can envision alternative futures and pathways to those futures using both forecasting and backcasting
	Adaptive Thinking	Cannot recognize when circumstances have changed over time or differ from expected circumstances	Can recognize when circumstances have changed over time or differ from expected circumstances	Can recognize when circumstances have changed over time or differ from expected circumstances enough to require an adaptive response	Can envision an adaptive response to circumstances that have changed over time or differ from expected circumstances enough to require such a response
	Diversity Thinking	Cannot recognize different stakeholder values or related perspectives on well-being	Can recognize different stakeholder values or related perspectives on well-being	Can recognize different stakeholder values, related perspectives on well-being, and related claims	Can recognize different stakeholder values, related perspectives on well-being, and the need to resolve conflicts among related claims
OTHER COMPETENCIES	**Collaboration**	Cannot work on a team	Can work on a team	Can work on a team to accomplish a task	Can work inclusively on a team to accomplish a task
	Stakeholder Engagement	Cannot articulate the value of stakeholder engagement	Can articulate the value of stakeholder engagement	Can identify the skills needed to engage stakeholders in ways that would move a society toward a sustainable future	Can demonstrate the skills needed to engage stakeholders in ways that would move a society toward a sustainable future
	Project Planning, Implementation, and Outcomes Evaluation	Cannot contribute to planning, implementing, or evaluating the outcomes of a project	Can contribute to planning a project	Can contribute to planning and implementing a project	Can contribute to planning, completing, and evaluating the outcomes of a project

Source: Updated and expanded from Smardon, Barresi & Reiter, 2019, pp. 128–29 Table 8.1.

the most work to do in transforming existing programs along SHES lines. Existing programs typically rely on the use of reductionist thinking (especially but not exclusively discipline-dependent thinking, including interdisciplinary thinking) to engage in analysis, which is the antithesis of what makes the Signature Competencies essential to the SHES approach.

The rubric in Figure 2 also can be used to assess the extent to which students enrolled in a program designed to enable them to acquire the SHES essential competencies have demonstrated those competencies. The program design question and the student performance question are separate questions, however. As any classroom instructor knows, the likelihood that a given student will acquire a given competency in a given program is a function of many factors,

only some of which are attributable to the design of the program itself. Similarly, the extent to which any assessment instrument is able to measure the acquisition of a given competency by a given student in a given program is at least partly a function of the validity and reliability of the assessment instrument, not the program's design. Anyone delivering a program designed to enable students to acquire the SHES essential competencies should be interested in the extent to which the students are demonstrating that they have done so. A failure by most of the students to demonstrate those competencies at the requisite level would be a cause for concern for many reasons, most importantly because of its implications for the students' ability to perform as SHES-competent practitioners. Yet the status of a program as a SHES program is a function of what it has been designed to do, regardless of whether exogenous factors impinge upon the program's success in performing as designed with respect to particular students at particular points in time.

Assessing Implementation of the SHES Approach as a Cognitive Strategy as a Feature of Program Design

To correspond to the SHES ideal, a program must be designed to enable students to acquire all the SHES essential competencies at the highest—or "Accomplished"—level of proficiency. Yet the SHES ideal requires programs to meet more than this one design criterion. The SHES ideal also requires programs to be designed so that the acquisition of the SHES essential competencies occurs in the context of the SHES approach as a cognitive strategy. The rubric in Figure 3 is designed in part for use in assessing that feature of program design.

The rubric in Figure 3 is two rubrics in one. The first two columns, read from top to bottom, summarize the sequence of steps that make up the SHES approach as a cognitive strategy. These steps unfold as a sequence of stages, with each stage unfolding as a sequence of phases. The stages are implicit in the SHES vision, the essence of which is a world of sustainable societies. The phases are implicit in the SHES mission, the essence of which is to sustain the viability of the human and environmental systems and interactions among those systems on which the realization of the SHES vision depends. These stages and phases may be depicted in either of two ways. First, they may be depicted as a sequence of steps applied recursively as each situation of concern in a society is transformed into a sustainable alternative. Second, they may be depicted as a non-recursive sequence applied to all situations of concern in a society in the aggregate, without regard to the relative timing of the transformation of each situation. These depictions of the SHES approach as a cognitive strategy differ only in how explicitly they address the timing issue. The rubric in Figure 3 leaves that issue implicit by depicting the SHES approach as a non-recursive sequence of steps applied to all situations of concern within a society in the aggregate.[10] The third column of the rubric in Figure 3 lists the SHES essential competencies that are implicated in each step of the strategy. This rubric provides the context for

---

[10] For more on the steps of the SHES approach as a cognitive strategy, see the SHES article on *The Pedagogical Challenge* in this issue of the *OIDA International Journal of Sustainable Development*.

Figure 3: A rubric for assessing implementation of the SHES approach as aa cognitive strategy as a feature of program design

THE SHES APPROACH AS A COGNITIVE STRATEGY		
BEGINNING	DEVELOPING	ACCOMPLISHED
SITUATIONS OF CONCERN		
Stages	Phases	Essential Competencies
I. Diagnosing the Sustainability Challenge	I.A. Confirming each situation of concern as an unsustainable situation	Holistic Thinking Supradisciplinary Thinking Diversity Thinking Collaboration Stakeholder Engagement Project Planning, Implementation, and Outcomes Evaluation
	I.B. Revealing the systemic and interactional complexity of each unsustainable situation	Systems Thinking Supradisciplinary Thinking Complexity Thinking Collaboration Stakeholder Engagement Project Planning, Implementation, and Outcomes Evaluation
II. Prescribing a Sustainable Response	II.A. Envisioning a sustainable alternative to each unsustainable situation	Holistic Thinking Supradisciplinary Thinking Future Thinking Diversity Thinking Collaboration Stakeholder Engagement Project Planning, Implementation, and Outcomes Evaluation
	II.B. Revealing the systemic and interactional complexity of each sustainable alternative	Systems Thinking Supradisciplinary Thinking Complexity Thinking Collaboration Stakeholder Engagement Project Planning, Implementation, and Outcomes Evaluation
	II.C. Envisioning systemic interventions that would transform each unsustainable situation into its sustainable alternative	Systems Thinking Supradisciplinary Thinking Future Thinking Adaptive Thinking Collaboration Stakeholder Engagement Project Planning, Implementation, and Outcomes Evaluation
III. Implementing the Prescription	III.A. Generating the system interactions needed to transform each unsustainable situation into its sustainable alternative	Systems Thinking Supradisciplinary Thinking Adaptive Thinking Collaboration Stakeholder Engagement Project Planning, Implementation, and Outcomes Evaluation
	III.B. Confirming the transformation of each unsustainable situation into its sustainable alternative	Systems Thinking Supradisciplinary Thinking Diversity Thinking Collaboration Stakeholder Engagement Project Planning, Implementation, and Outcomes Evaluation
SUSTAINABLE SOCIETY		

(Vertical labels on right side: BEGINNING, DEVELOPING, ACCOMPLISHED)

demonstrating the acquisition of those competencies that is missing from the rubric in Figure 2. The rubric in Figure 2 is essentially embedded many times over in the rubric in Figure 3.

The rubric in Figure 3 is designed to be read from top to bottom and left to right. As applied to programs, it describes the conceptually and chronologically most logical sequence of steps involved in transforming the curriculum of an existing program into the SHES ideal or in building the curriculum of an ideal SHES program from scratch. Thus, this rubric describes a strategic pathway toward two distinct but related ends in either setting. To correspond to the SHES ideal, a program must meet two design criteria. First, it must be designed to enable students to acquire the SHES essential competencies at the highest—or "Accomplished"—level of proficiency as described in the rubric in Figure 2. Second, it must be designed to enable students to do so in the context of the stages and phases of the SHES approach as a cognitive strategy at the highest—or "Accomplished"—level of proficiency as described along the vertical and horizontal axes of the rubric in Figure 3.

Like the rubric in Figure 2, the rubric in Figure 3 also can be used to assess student performance in a SHES program. As applied to students, the rubric describes the conceptually and chronologically most logical sequence of steps involved in transforming a student enrolled in a SHES program into a SHES-competent graduate of that program. As was true for the rubric in Figure 2, however, a failure by certain students to perform at the level that a SHES program was designed to enable them to perform could be a function of many factors unrelated to the design of the program per se. Whoever is delivering the program should address those factors to the extent that it is possible to do so. The need to do so is not relevant to whether the program has met the design criteria necessary for it to qualify as a SHES program. That need is relevant to the extent to which graduates of that program will be SHES-competent practitioners in the field, however.

The rubric in Figure 3 can be used in other ways as well. In general, it describes not only the conceptually and chronologically most logical sequence of steps involved in transforming or building programs and transforming students enrolled in those programs but also in transforming stakeholders and whole societies as the social learning that is the SHES strategic goal occurs over time. Social learning in this context is a society-wide process in which individuals learn from each other and behave in ways calculated to transform unsustainable societies into sustainable ones and to maintain them as such. At least in general terms, the rubric in Figure 3 can be used to assess progress along those lines by stakeholders and whole societies too.

Conclusion

The SHES approach to sustainability education and practice is a response to what is probably the most pressing academic question of our time: how can colleges and universities succeed in providing students with the knowledge and skills needed by practitioners and whole societies to meet the existential sustainability challenges that plague the modern world? Meeting these challenges will require confronting them on their own terms, which means as wholes of almost mind-boggling complexity. Some colleges and universities will need to build the requisite degree programs from scratch. Others will need to transform existing programs in ways that embrace the signature feature of the SHES approach, which is the use of holistic thinking (especially but not exclusively systems thinking) to reveal complexity holistically in a stepwise fashion as an alternative to the use of reductionist thinking (especially but not exclusively discipline-dependent thinking, including interdisciplinary thinking) to engage in analysis. In either case, those colleges and universities are likely to find the assessment rubrics in this article to be essential in evaluating existing programs, charting strategic pathways for transforming existing programs along SHES lines or building new SHES programs from scratch, and recognizing progress in either regard as it occurs.

References

1. Focht, W. & Barresi, P. (2019). The SHES Approach to Sustainability Education. 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. 62–80). Abingdon, UK: Routledge.
2. 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.
3. 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.

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. 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/

6. The Platform for Sustainable Performance in Education. (2025). *AISHE*. Retrieved August 6, 2025, from https://www.eauc.org.uk/theplatform/aishe

7. 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.