

[A Learning Theory Framework for Sustainability Education in Tourism.](#)

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Abstract:

As efforts abound across tourism educator networks to craft plans for guiding educational responses to the threats of tourism to people and the planet, it is worth exploring areas in which such labors might be made more efficient, and thus more timely and productive. In this article, we examine how the concept of learning systems can serve as a useful tool for identifying opportunities to improve sustainability education planning in tourism. We provide a conceptual framework for sustainability education that moves beyond current models by incorporating additional concepts from learning theory and from a 2-year curricular revision process.

Keywords: learning theory | sustainability | stakeholders | supply chain | systems | tourism | tourism educators | tourism education | sustainability education

Article:

INTRODUCTION

The sustainability movement exhibits the inductive nature of a learning system, given that concerned individuals are joining together in attempts to collect and systematize knowledge and guide action to protect people and the planet. Learning systems are composed of inputs in the forms of learners and the influences of communities of practice; similarly, learning systems deploy processes in the form of cognition (of learning content, including awareness of context and impacts) and action (implying implementation methods and measurement; Hall & Paradise, 2005). Networks of tourism educators such as the Building Excellence in Sustainable Tourism (BEST) Education Network (EN) and Tourism Education Futures Initiative (TEFI) can be viewed as part of the emerging and complex sustainability learning system. Educators in TEFI have strongly supported the insertion of sustainability concepts and values into tourism education (Sheldon, Fesenmaier, & Tribe, 2009); TEFI and BEST EN demonstrate the type of global and collective leadership that is required to formulate sustainability-focused educational strategies that assist tourism educators at the local levels in preparing students to manage with an eye to achieving a sustainable future and a profitable present.

Specific guiding value sets have been identified within the TEFI framework: ethics, knowledge, professionalism, mutuality, and stewardship (Liburd & Edwards, 2010). Clearly, there has been momentum among BEST EN and TEFI researchers toward the goal of embedding sustainability principles into what tourism students are learning (BEST EN, n.d.). Nonetheless, there are still questions remaining about how best to transform existing hospitality and tourism education so it meets the challenges and promises of sustainability.

For the purpose of this article, two primary issues for planning sustainability education in tourism are discussed. First, employing the perspectives of the literature on learning systems and communities of practice, the authors draw attention to sources of inefficiency that have influenced their own 2-year curricular revision process at the authors' university. Secondly, the need for additional reflection on specific learning theories (i.e., Bloom's revised taxonomy in Krathwohl, 2002; Kirkpatrick & Kirkpatrick, 2005) is addressed to help educators define the learning goals for sustainability education in the tourism field (Espinoza & Porter, 2011). Sustainability education in tourism is broadly defined herein and encompasses any level of education or training related to environmental, social-cultural, and economic issues in the conduct of tourism enterprise and tourism development.

In this article, the authors examine how the concept of learning systems can serve as a useful tool for identifying opportunities to improve sustainability education planning in tourism. A conceptual framework for sustainability education is provided that moves beyond current models by incorporating additional concepts from learning theory. The presented framework aligns a variety of content foci of sustainability education that have appeared within the tourism literature (ranging from teaching philosophy/values to operational management skill training to leadership development) with Bloom's taxonomic ladders of knowledge and cognitive processes (Krathwohl, 2002). Furthermore, the framework incorporates Kirkpatrick and Kirkpatrick's (2005) model of evaluation to suggest appropriate evaluation criteria for each of three learning goals for sustainability education that are presented in this article. The authors' current work in revising a university-level hospitality and tourism program to deliver comprehensive sustainability education will exemplify significant uses and issues related to these learning theories and systems concepts.

SUSTAINABILITY EDUCATION AS A LEARNING SYSTEM

Through the continuous endeavors of educational leaders and researchers in a variety of fields (i.e., Lewis, 2005; Tribe, 2002), sustainability education, both within and beyond the field of tourism, has advanced steadily as a complexity of overlapping learning initiatives. Nkhata and Breen (2010) stated that “understanding of an integrated learning system is essential if we are to successfully promote learning across multiple scales as a fundamental component of adaptability in the governance and management of protected areas” (p. 403). This statement is equally applicable in the context of tourism. However, Henry (2009) finds no systematic treatments of

learning for sustainability in the literature and concludes that “the development of strategies to promote learning for sustainability remains an elusive goal” (p. 131).

As efforts abound across tourism educator networks to craft plans for guiding educational responses to the threats of tourism to people and the planet, it is worth exploring areas in which such labors might be made more efficient and thus more timely and productive. To examine inefficiencies, the authors have conceptualized sustainability education as a learning system with various components. Figure 1 presents the authors' view of a holistic learning system and incorporates global communities of practice (of educators, practitioners, and agencies), inputs from learners, goals, implementation, evaluation of the learning, and a feedback loop.

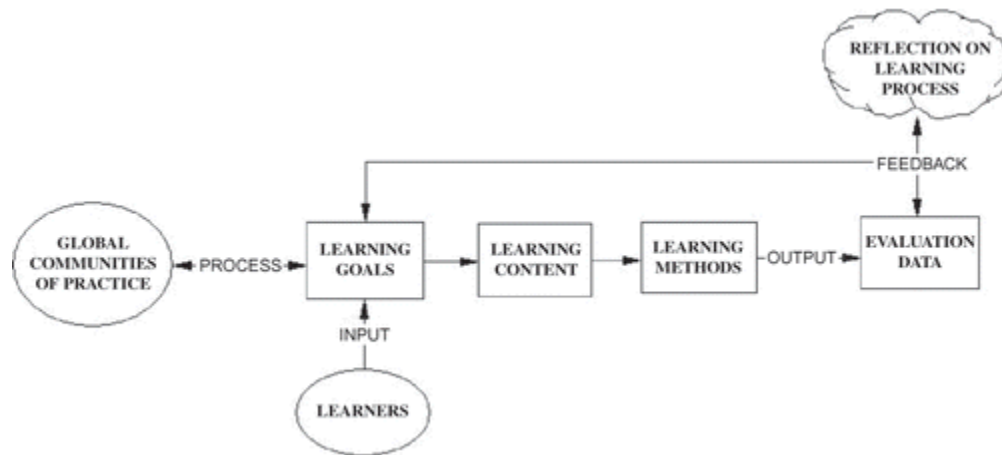


FIGURE 1 Learning system with feedback loop.

The system concept generally employs a feedback loop to permit both cognitive reflection and measurement data to feed back to the learning process in terms of changes in learning goals, content, or instructional methods. Learning systems can be examined as a local phenomenon or can be conceived of as the more abstract global learning system for a field or discipline. More importantly, learning systems are construed as existing by thoughtful design, rather than due to random manifestations of goals, content, or activities.

In the context of the authors' curricular revision work, the natural first step for understanding sustainability education in tourism as a learning system involved a comprehensive examination of existing learning content and learning goal statements. The authors anticipated finding a coherent learning process for sustainability education already applied to tourism due to the numerous publications, course syllabi, and conference materials readily available through Internet and physical searches. A sizable effort was made to access materials globally, through means of a review of leading sustainability organizations, best-practice tourism and hospitality academic programs and professional associations, and organizational development efforts of tourism and hospitality agencies and businesses.

The basic premise of a cohesive learning system guiding sustainability education foundered upon review of the materials accessed. Faculty appraisal of existing sustainability learning content and learning goals for tourism and hospitality uncovered two principal sources of system inefficiency: (a) lack of consensus around (or unnecessary revision of) core learning content, and (b) lack of good fit between global resources supporting cognition about sustainability and the local priorities for educational strategies. These inefficiencies have been noted in the tourism literature. “Academics have been criticized for their preoccupation with defining and debating the conceptual aspects of sustainable development and its application to tourism, at the expense of considering the practical aspects, particularly, the development of tools to implement the concept in practice” (Ruhanen, 2008, p. 429).

The authors have found that such inconsistency around desirable sustainability learning content for the tourism field has been detrimental to the development of a strong rationale for presenting new sustainability curriculum to peer curriculum reviewers at the university. Ultimately, the lack of universally recognized learning content has resulted in the authors being obliged to develop background justifications based on the recommendations of strategically hired consultants committed to sustainability education, rather than being able to point to a systematic and cogent argument supported by the industry or the tourism and hospitality academic community as a whole. Based on the authors' experience, it is particularly important to address inefficiencies in three areas: the development of core learning constructs, learning-goal prioritization, and content classification systems.

MAKING SENSE OF SUSTAINABILITY EDUCATION LEARNING CONTENT

The development of core learning constructs is the first area of concern that significantly impacts a faculty's ability to define learning goals for a sustainability education program in tourism and hospitality. Construct utility is a vital consideration for instructional development as well as for research modeling. Without careful attention to the creation of discrete and meaningful core concepts, educators cannot hope to move learners from initial cognition phases forward to action phases and on to cognitive reflection. Furthermore, useful learning goals for formal sustainability education initiatives cannot be developed when the core concepts in a field are weakly constructed. Because of the importance of good construct development, much of the academic community's effort has historically been spent on attempting to refine theoretical definitions and scientific principles that will be used to design instructional lessons and research studies (i.e., Jaccard & Jacoby, 2009; Smith & Hitt, 2005; Styhre, 2003).

In this vein, the authors note that tourism leaders and educators have devoted significant effort to defining the core sustainability principles that leaders believe ought to guide actions in the tourism field. As noted in the introduction, the TEFI has taken a step forward in crafting an array of five value sets (ethics, knowledge, professionalism, mutuality, and stewardship) that are positioned broadly as principles, which can be converted into relevant learning goals for the education of both tourism publics and tourism professionals around the globe. It became

apparent, however, as the authors attempted to incorporate these value sets into the design of learning goals for their program, that the constructs underlying the five value sets were not sufficiently discrete, and thus, it became difficult in practical terms to use these value sets to underpin the new curriculum.

Definitional issues can be seen in terms of construct overlap across the TEFI value sets. For example, social equity is addressed in the discussion of the ethics value set (Liburd & Edwards, 2010, p. 9) in the context of making good versus bad choices; similar arguments for impartiality and equality are found again in the presentation of the mutual respect (mutuality) value set (Liburd & Edwards, p. 11). What the reader takes away is that in the world of tourism education, one of the classical ethical reasoning theories (justice or fairness) is to be reintroduced as the separate value construct of mutuality. Repositioning justice/fairness theory in this manner could be construed as an impediment for actually teaching ethical decision making to tourism students, particularly those students who might also take a classical ethics course as part of their academic programs. The utility of the mutuality construct as a primary sustainability value would be diminished due to its lack of uniqueness as a construct. Having redundant treatments of justice/fairness in this array of sustainability values might add to confusion on the part of the student, if not the educator attempting to develop a lesson plan.

Continuing the examination of the value sets described by Liburd and Edwards (2010), one sees that the value set associated with knowledge (p. 10) overlaps with the value set of professionalism (p. 10), in that both focus on the use of evidence, reflective activity, and collective responses, with perhaps the former being more macro-oriented in the form of networks and the latter being more micro-oriented in that it concerns team member performance. Although the examples of conceptual overlap in this article are isolated ones, the underlying concern the authors had in the curricular development process is that core content should be founded on conceptually discrete constructs, each of which add separate utility to critical thinking and decision processes in the development of students.

With this in mind, another source of inefficiency with respect to the development of core content is the assumption that completely new models for teaching and learning sustainability curriculum must be developed for tourism. At the minimum, educators will need to use care in making decisions about how to adapt previously codified systems of learning and practice to the goals of sustainability education in tourism. Returning to the professionalism value set in Liburd and Edwards (2010), we see that a model based on the philosophy of continuous improvement is partially adapted rather than fully integrated into the plan for sustainability education. Concepts such as attention to the customer and services and timeliness of evidence might best be laid at the door of already well-known quality control mechanisms. The need to identify appropriate learning content for sustainability education in tourism is real, but there is an equally valid need to recognize and adopt existing decision tools (i.e., ethical and quality improvement decision tools) in their entirety rather than absorbing bits and pieces into newly constructed sustainable tourism models. By retaining the whole of previously codified systems of learning and practice,

tourism educators will be able to focus energy on applying such tools to tourism sustainability contexts, rather than linger unnecessarily in a stage of continuous tweaking of core content.

A second concern that emerged during the development of primary learning goals for the program was that of a lack of clear prioritization of learning goals in sustainability education for the tourism field. What has been absent from the literature on sustainability education in tourism seems to be the negotiation of critical core sustainability learning goals for the tourism higher education community that are durable and universal. Sustainability education priorities can be influenced by individual and organizational agendas as well as by broader sea changes in the concerns of a society—this is unavoidable. Wright's (2007) comment that in the general higher education sector there is a “lack of cohesion amongst researchers due to the interdisciplinary nature of the emerging [sustainability] field and few opportunities for international intellectual exchange (p. 35)” applies to the tourism sector as well. Educators from varying disciplinary backgrounds studying tourism are likely overwhelmed by the numerous disparate and possible sustainability foci and may be unnerved by differing senses of urgency among academic, practitioner, and public bodies.

Even when the sense of urgency to take specific actions about sustainability has been high and ongoing, say for recycling education or water conservation in a community, Bramwell and Lane (2008) concede that sustainability priorities in society will inevitably evolve and point to shifts from environmental sustainability to “just sustainability” (just in the sense of fairness; Agyeman & Evans, 2004, p.157). They also point to Beck's (1992) belief that some countries have moved from social equity issues to focus on issues primarily associated with the notion of risk management.

Thus, either real or perceived shifts in priorities can cause individual tourism educators to avoid sinking personal investments of time and resources into curricular priorities perceived as transitory, particularly if these sustainability programs appear to lack adequate support from governments, businesses, or citizens. The lack of universal or durable core concepts and terminology has been particularly troublesome to the authors' efforts in devising core curriculum in sustainable tourism and hospitality at the university. The tendency of benchmarked existing tourism programs to specialize in certain aspects of sustainability—for example, the sciences of green tourism or the issues of destination development and stakeholder concerns—is very evident across tourism curricula reviewed in the present curricular revision process. Added to this is the very real resource constraint of current faculty skill bases and personal motivations in the area of sustainability, as well as general obligations to seek grants and endowments that tend to be largely narrow in focus and intent and driven by donor interests.

Additional forces such as being within a school of business and having natural existing partnerships with programs such as entrepreneurship are also impact factors when exploring priorities for learning goal and course development at the university. Lastly, the competition for terminology (i.e., responsible tourism, sustainable tourism, eco-tourism, ethical tourism) haunts

faculty efforts in not only assigning titles to prospective courses, but in deciding on a suitable new academic program name that will go beyond trendiness.

A third source of inefficiency in compiling and organizing core content in a learning system is found when competing classification systems exist for filing and accessing learning content in sustainability. Generally, academic disciplines attempt to guide learners toward core disciplinary content by using distinct categorization labels that demonstrate easily comprehended hierarchical or typological logic (e.g., genre, historical, or geographical classifications of written literature). In the case of sustainability education in tourism, guiding frameworks in the form of compendia of practices in education and training for sustainable development have been compiled by leading organizations such as the United Nations Educational, Scientific, and Cultural Organization's International Center for Technical and Vocational Education and Training (UNESCO-UNEVOC) and the BEST EN.

These compendia organize the vast issues surfacing in discussions of sustainability education into digestible chunks of information. BEST-EN's Think Tanks have been organized by topics ranging across sector interests such as transportation, events, and marketing; skills such as strategic management and networking; issues such as risk, values, and corporate social responsibility; and result areas such as quality of life. UNESCO-UNEVOC's annotated bibliography positions practices under categories such as education and training, employment, sustainable livelihoods, stewardship, and the triple bottom line (UNESCO, 2004). Neither of these two major repositories' classification schemes have a clear classification logic, nor do they attempt to integrate learning theories into their categorization of the materials or suggestions for sustainability education. It was the authors' exposure to this vast “bits and pieces” disorganization of learning content and materials that prompted faculty interest in exploring how more specific learning theories (i.e., Bloom, 1956; Kirkpatrick & Kirkpatrick, 2005) might be applied in organizing learning goals and content for sustainability education in tourism and hospitality. The ensuing discussion may be construed as aligning the what of learning goals and content with the who and when of learning in sustainability education.

LEARNING THEORY AND DESIGN OF SUSTAINABILITY EDUCATION

Having experienced considerable difficulties in deciding what core learning goals and learning content ought to be for the curricular initiatives at the university due to content-related inefficiencies in the field, the authors wish now to explain how specific learning theories helped the faculty determine their primary learning goals for the revised program. This section of the article will introduce a learning theory perspective into the design of sustainability education initiatives by focusing on three interdependent learning goals drafted by the authors; these learning goals directly correspond with Bloom's (1956) hierarchical classification of knowledge levels, under which sustainability content from the tourism literature (e.g., Liburd & Edwards, 2010) may be organized.

The classic (1956) text edited by Benjamin Bloom (commonly referred to as “Bloom's Taxonomy”) was introduced to teachers as a device for the classification of educational objectives. Bloom expressed the clear desire to support teachers' conversations around the concepts of curricular design and instructional innovation. It is the idea that the taxonomy can help guide the conversation about learners and content in the sustainability field that makes Bloom's work so appealing, given the aforementioned deficiencies in the way the tourism community has organized sustainability content and concepts to date. Bloom's model is useful primarily because it offers a way to arrange learning content across a continuum of learner development within a field of study. The authors of the current article offer this device principally as an organizing tool and a conversation starter rather than meaning to debate the validity of the taxonomy or to urge strict adherence to its component parts.

The 2001 revised Bloom's taxonomy has been selected for the purpose of this article to take advantage of research-based enhancements in its design (Krathwohl, 2002); the revised taxonomy differentiates between: (a) levels of knowledge in a field and (b) levels of cognitive processing exhibited by a learner. A major portion of the original taxonomy has been incorporated into a “cognitive process dimension” that specifies six subdimensions in order of learners' progressive cognitive processing of a knowledge domain. Remembering is described as the lowest stage of cognitive processing, and creating is deemed the highest stage. Table 1 shows the four levels of the theorized knowledge dimension, and Table 2 displays the six levels of the cognitive process dimension of the revised Bloom's taxonomy.

Tables 1 and 2 have been omitted from this formatted document.

The knowledge dimension of the revised Bloom's taxonomy, presented in Krathwohl (2002) has been particularly valuable for the authors' curriculum development task. Knowledge levels are seen to run from more basic factual knowledge to the highest level of metacognitive knowledge. It is in contemplation of the knowledge dimension in the revised taxonomy that the authors were able to see more clearly how to organize a curriculum in sustainable tourism and hospitality. Using Bloom's terminology, an initial priority is to have students conceptualize what sustainability is about and what the (competing) guiding frameworks are in terms of ethics and values in the industry and among educators and advocates. From a practical standpoint, students are also expected to do something in terms of actively practicing what they learn—through class activities, internships, and eventually job placement. And lastly, students are expected to critically self-reflect on what sustainability means to them personally and how they might champion and lead others to pursue sustainable actions. This led to three critical overarching learning goals; these learning goals are closely aligned with Bloom, as depicted in Table 3.

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Learning Goal 1 is centered on philosophical debates and socially constructed regulatory systems in the tourism field. It is evident that sustainability knowledge is built upon a foundation of

political activity. Through lobbying and grassroots activism, stakeholders in the tourism industry, and in the social environment that surrounds it, argue their cases before the world (MacLellan, 1997). Communities face off against developers, the public reacts against tourists, operators react against regulators, and the scientific community studies it all. As a primary learning goal for college students, and perhaps the greater public at large, the tourism field must design an education strategy to prepare stakeholders from all possible sectors to recognize and anticipate the agendas and rhetoric of all interested persons (Mckenzie-Mohr, 2000; Sheldon et al., 2009). Such learning will require constant reinforcement of theories of ethical reasoning, ecological systems, responsible development, and interdependence. Learners additionally must recognize the intents and sources of regulatory systems and comprehend these as social constructions that are enacted when organizations and individuals prompted by sustainability principles successfully influence societies and their industries.

Overall, the field of tourism education has benefitted by the preponderance of expertise focused on devising philosophical statements and guidelines for sustainable practice. Sustainability education efforts, however, must eventually teach human agents to recognize opportunities in the supply chain system for transforming inputs, outputs, and processes in ways that support sustainability goals (Seuring & Müller, 2008). Learning Goal 2 concentrates on the doing aspect of sustainability in tourism and hospitality by vigorously dissecting the tourism and hospitality supply chain and its inputs, outputs, and processes. In the curricular revision at the authors' university, it was critical to identify the various actors in the supply chain in both tourism and hospitality enterprises and to determine which of these actors to target for educational interventions (Jithendran & Baum, 2000). It can be predicted that educators reduce inefficiencies in the learning system when they collaborate closely with practitioner and community education partners to deliver sustainability education to the right person at the right time, thereby avoiding lack of good fit between learning content and application setting. Internal actors typically include employees, guests, suppliers, and the greater public (Perron, Côté, & Duffy, 2006). It is obvious that all of these actors in the sustainability learning system potentially may have contact with sustainability curriculum through studies at the campus or the university's community outreach efforts.

Sustainability education requires a multidisciplinary approach that spans the core skill sets of any individual set of actors, to expose the whole of the supply chain system to analysis to find operational improvements that yield sustainability results. External agents impact the tourism field as well; such agents include sustainability specialists or contractors from other sectors who need to be familiarized with the industry's supply chain. Educators must leverage partnerships with these external actors to encourage (or adopt) best practices in other relevant fields. In the limited context of the present curricular revision, the faculty are planning for such strategic networking and bridging with external fields by broadening the scope of the program advisory board members and by reviewing what students will take from related disciplines through strategic minors, related area electives, and internships.

Learning Goal 3 focuses on producing the sustainability advocates, the leaders, and the champions for the tourism and hospitality field. The development of advocacy for sustainability is an attitudinal development goal, complemented by skill development in communication and negotiation, whereby leaders exhibit not merely core knowledge and skills, but also metacognition of how personal values impact willingness to learn and act. Furthermore, this third learning goal invites personal transformation and the development of sustainability education leadership for the future of the tourism industry.

ENHANCING THE MODEL OF SUSTAINABILITY EDUCATION

Beyond setting the overarching learning goals for curricular revision, the authors also looked to learning theory to guide the faculty in determining other critical features of the curriculum. Table 4 displays the faculty's current thinking on how additional components of the curricular design are organized under the three primary learning goals. Examples are provided as follows with temporary course titles as fillers for the purpose of the article. The full curriculum is not yet finalized, and therefore, the discussion will draw upon subset examples only. In terms of critical discourses that will be used to attain the desired learning goals, the authors anticipate that within courses that introduce the philosophical knowledge base underpinning sustainability (e.g., Principles of Sustainable Development), the discourses used will be heavy on ethical reasoning and interdependence of ecological entities.

Table 4 is omitted from this formatted document.

Courses such as Sustainable Lodging or Sustainable Food and Beverage are meant to inspire students to question the current supply chain activity of tourism enterprises. Such curricula will require learners to focus on operational analysis of inputs, outputs, and processes and to search for entrepreneurial funding for innovative practices that are sustainable. Lastly, a course such as Corporate Social Responsibility will expand students' use of communication and leadership strategies to foster within themselves a metacognitive phase of personal development moving them potentially into roles of sustainability advocacy.

Although the revised Bloom's taxonomy (Krathwohl, 2002) does not exclusively pair specific cognitive processes with specific knowledge levels, the authors have done so only as a way of expressing that, for the most part, they expect courses in the revised curriculum to advance students across the various levels of cognitive processing in a thoughtful way. In courses that introduce the philosophical knowledge base, a majority of course activities will be geared toward students remembering and understanding the different frameworks and arguments about sustainability that have surfaced across the globe. In like manner, in courses that focus on transformative reengineering of the supply chain, students will apply and analyze operations using a variety of scientific and operational techniques to foster continuous achievement of sustainability goals at the enterprise level. Lastly, in courses that focus on developing students as the new wave of leadership in sustainability, considerable attention will be paid to activities that

ask students to evaluate existing live operations and/or to create new examples of sustainable enterprises using holistic thinking and long-term horizons.

An additional source from the learning theory literature is Kirkpatrick and Kirkpatrick's (2005) updated seminal model of evaluating training. Their work offers useful insights in terms of the most appropriate ways to measure the impact of sustainability education. Four levels of evaluation are described: measures that address learner reaction to or liking of the learning experience, measures of competency improvement taken within or right after the educational intervention, measures of transference of learning to relevant settings and situations (i.e., the workplace), and longer-horizon organizational or ecological results that may be attributed to the educational intervention.

In Table 4, the authors have suggested that the most relevant measures for courses that focus on the philosophy of sustainability are those measures that focus on reactions of learners to sustainability as a mission as well as their degree of acceptance of balanced criteria for measuring business performance. Moving on to the goal of transformations along the supply chain, the authors posit that relevant evaluation criteria in this context include learning transfer, behavioral change, and ideally results evidenced by environmental indices and measures (Štreimikienė, Girdzijauskas, & Stoškus, 2009), such as air quality, reduced cradle-to-grave impact of products, and reduced project impacts on regions. Finally, in terms of measuring curricular impact on the development of leadership and champions for sustainability in the tourism and hospitality field, it is presumed that relevant measures of learning in this context include program graduates' abilities to craft sustainability-oriented mission statements and demonstrate increased investments in training, innovation, and entrepreneurship supporting sustainability in their future tourism businesses and providing leadership to social networks sponsoring sustainability initiatives.

CONCLUSION

It was noted at the outset of this article that communities of practice in tourism education are compiling resources and encouraging learners to embrace sustainability values and to implement sustainable procedures in the tourism supply chain. As agents within a learning system, educators have come together to broadcast critical sustainability value concepts and unify the educational community in identifying and prioritizing high-utility sustainability education strategies. Like every system, sustainability education in tourism possesses the potential for inefficiencies. Ambiguities in the definition of core learning constructs, for example, can make curricular and instructional design decisions more difficult. Competing or shifting priorities in the establishment of learning goals for sustainability education in tourism are another source of inefficiency in the learning system. Finally, the efficiency of searches for learning content that is being made available across the globe is hindered due to weakly constructed classification schemes.

This article has tried to advance the theory underlying sustainability education by specifying a systems approach to learning design. The article also calls for learning goals to be aligned with relevant learning theory, such as Bloom's taxonomy, and with learning evaluation criteria, such as Kirkpatrick and Kirkpatrick's (2005) model of evaluation, to build a holistic model of sustainability education for the future. The authors provide concrete examples of learning system inefficiencies encountered while engaging in a 2-year process of curricular revision that moved a hospitality and tourism program toward a strengthened position in sustainability education. While the primary goal of the article has been to share the learning system framework that was devised during the curricular revision, a few additional remarks are in order. These remarks follow on the heels of the authors' continued inability to find reasonably organized learning content in the area of sustainability in tourism and hospitality.

The first remark is targeted to readers who find themselves engaged in activities meant to coordinate the vast collections of learning content in the area of sustainability in tourism and hospitality. There is a notion separate from that of communities of practice that is called shared epistemic agency; the latter “emphasizes the capacity that enables people to be more than mere knowledge ‘carriers’ ... to be productive participants in these knowledge-laden, object-driven collaborative activities and to be in charge of their own [and the system's] knowledge advancement” (Damsa, Kirschner, Andriessen, Erkens, & Sins, 2010, p. 146). The difference between generic communities of practice and shared epistemic agency (i.e., Glasser, 2010; Hildreth, Kimble, & Wright, 2000; Wenger, McDermott, & Snyder, 2002) is that the latter is intentional in its striving to be more than the sum of collective parts. Shared epistemic agents are expected to join together to create new and robust knowledge objects, rather than merely amass individual knowledge into a central location. Educators in the tourism field may strive to move what they are currently doing in amassing information on the Web and in published works from merely centralizing its location to a more cautious and inspired conceptualization of its alignment with the various learning theories discussed in this article.

A second remark expands on the finding that it is nigh to impossible to develop curriculum in the absence of agendas and prioritizations. In cases where time to deliver curriculum is limited and educators must limit learning content in courses, the authors remind the reader that access to the whole range of learning can still be facilitated through centralized data collection and curricular development efforts of large-scale international groups such as BEST EN and TEFI. Following the thought process of Liburd and Hjalager (2010), it may be that educator networks have the potential to combat the instability and inconsistency of sustainability education learning priorities by establishing open-source depositories of learning content. With these collective actions, educators at the micro-level would be able to view the learning system as able to expand exponentially (e.g., though the low-cost use of technology storage space), rather than be obligated to view learning content development as a zero-sum game limited by number of weeks in a semester or the local priorities of the institution. When learning content is made continually available through cloud computing, educators can choose or not choose to employ specific

content as their programs require and, more importantly, can refer learners to other relevant content that was not specifically covered in the lesson plan.

The authors want to underscore the importance of aligning instructional activities with learning goals; more research is needed on this topic. Wright (2007) found that among 35 international higher education sustainability (HES) experts gathered in Halifax, Canada in October 2005, out of 19 possible research agenda items, respondents ranked studying teaching and learning methods in the sustainability education context as the top research agenda item for the higher education sector to be able to move the cause of sustainability forward. Wright also noted that “an investigation of what epistemologies and research methodologies are best suited for HES was considered of utmost importance to the group” (p. 40).

Equally necessary is the expansion of formal assessment devices to track sustainability learning impacts over time (e.g., Wallis, Kelly, & Graymore, 2010) to foster in educators and institutions a longer-term commitment to any particular sustainability education strategy they may choose to implement. Assessment, like low-cost cloud computing, has a beneficial dampening effect on the tendency to update unnecessarily one's syllabus or instructional plan in ways that toss out critical and still applicable core constructs solely because they were first conceived of years earlier. According to Wallis et al., activities related to devising assessment procedures and reviewing outcomes are vital to construct robustness as well.

In summation, the authors have shown that sustainability education progresses both at the local development and the system development levels, and they have sought to facilitate educational planning activity by specifying learning goals and their relevant elements. While the first two learning goals presented in our model are tightly coupled to existing and emerging practices in the field, the authors additionally believe that the development of champions must be a learning goal for sustainability education to make even sustainability education sustainable.

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