

Teaching Sustainability in Higher Education Institutions: Assessing Hospitality Students'  
Sustainability Literacy

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## Teaching Sustainability in Higher Education Institutions: Assessing Hospitality Students' Sustainability Literacy

### Abstract

Currently, higher education (HE) institutions include sustainability concepts into their programs. Previous literature examined the opportunities and challenges of integrating sustainability at an institutional, curricular, and instrumental level. We administered the Sulitest (sustainability literacy test) and a survey to first semester students at one international hospitality management school in Switzerland. While our students scored slightly higher than the Swiss average, the lowest scores recorded derived from the category *knowledge- role to play, individual & systemic change*. The survey demonstrated students' high interest and strong support of sustainability in their academic and professional careers. Over 67% of respondents rated sustainability for their professional lives as extremely important. HE institutions have the opportunity to teach sustainability concepts that resonate with students. While research promotes embedding sustainability in all courses, our results show that students' sustainability knowledge can improve in one intensive course. Further studies must be conducted to confirm retention and engagement.

Keywords: sustainability literacy, Sulitest, hospitality management education, higher education, sustainable development goals

## Introduction

Higher education (HE) has played a significant role in the shaping of future leaders and has evolved from traditional magisterial courses of abstract concepts to student-centered learning, from studying for a degree to producing lifelong learners. The course topics, too, have expanded to include gender studies, digital media, sociocultural issues, and, over the past few decades, sustainability. HE institutions have become significant contributors to the promotion of sustainability (Karatzoglou, 2013; Ruhanen & Bowles, 2019) and the preparation of a new generation of graduates whose values and skills contribute to social progress and the advancement of knowledge (Zeegers & Clark, 2013). If HE takes its responsibility seriously, it can prepare young graduates who believe in lifelong learning (Renfors, Veliverronena, & Grinfelde, 2019; Savelyeva & Douglas, 2017), are active participants in the community (Stir, 2006), and can address environmental and social challenges critical to their and others' success (Deale & Barber, 2012). Since the United Nations declared 2004-2015 as the Decade for Sustainable Development (Seto-Pamies & Papaoikonomou, 2016; Sidiropoulos, 2014) and the UN announced its Principles for Responsible Management Education (Seto-Pamies & Papaoikonomou, 2016), the US passed the Higher Education Sustainability Act (HESA) and the University for a Sustainable Future, an international initiative which focuses on sustainability and environmental literacy, was created. In fact, the attitude toward sustainability has shifted from doing what we have to do (legally) to doing what we feel is right. As a result, many HE institutions have introduced sustainability concepts into the curriculum and as part of the school strategy to better prepare students to become leaders who care about the world they share with others.

As the greatest contributors to the formation of their students, forthcoming entrepreneurs, business leaders, managers, and employees, HE institutions need to teach about and believe in sustainability initiatives and actions (Mochizuki & Fadeeva, 2010; Seto-Pamies

& Papaioikonomou, 2016). As educators, however, we cannot assume that students have similar knowledge, interest, motivation, or views about sustainability. Rather, educators in HE institutions should provide the opportunity for students to develop an appreciation for making choices, current and future, which consider the three pillars of sustainability (social, environmental, and economic). In this study, the Sulitest has been chosen to spark debate and engage students in sustainability issues. Our purpose is to evaluate what if any improvement can be made in students' sustainability literacy when following one intensive course in the beginning of their HE studies.

Hitherto, no study on sustainability literacy using the Sulitest or other similar tool has been conducted in HE bilingual (French and English) hospitality schools with such an international student body. Beyond gauging student knowledge of sustainability literacy through the Sulitest results, student responses to a short survey where they were asked to rate their perceptions on the importance of sustainability in higher education and to their professional careers and their overall interest in learning about sustainability were recorded. Further, students confirmed where they had gained their knowledge of sustainability prior to entering this HE institution. The objective of this paper is to firstly gauge how much students know and don't know about sustainability. This knowledge will be useful in deciding how to better integrate sustainability into our programs to prepare our graduates to be future change agents for the international hospitality industry. While there is no question of HE institutions integrating sustainability to some extent within their programs, there is scant quantifiable evidence of what students actually learn and retain. This study attempts to fill this gap by examining first semester students' sustainability literacy results through the Sulitest.

The paper begins with a brief overview of the literature on sustainability in HE institutions and is followed by the Sulitest results from the pre and post-tests as well as the results of a short survey conducted with first semester students in autumn 2018-2019. The

paper concludes with recommendations and implications regarding the implementation or inclusion of sustainability and sustainable-related topics for consideration in our institution and other HE institutions, regardless of level or program of study.

## **Literature Review**

### **Sustainability in HE Institutions**

HE institutions provide an ideal setting for promoting sustainability and influencing students' worldviews and attitudes to promote positive social change (Ruhanen & Bowles, 2019; Seto-Pamies & Papaoikonomou, 2016). Nonetheless, educators cannot assume that all students have similar knowledge or attitudes toward sustainability (Sidiropoulos, 2014) which can make implementing sustainability initiatives and actions more complex in a campus setting. Thus, to produce globally responsible citizens who make 'better' choices in and for the future, HE institutions need to be dynamic and committed to sustainability initiatives. Nonetheless, the practical implementation of incorporating sustainability into HE institutions has proven difficult (Zeegers & Clark, 2013). Without the support of the stakeholders including management, administration, students, faculty, employers, and the local community, changing teaching paradigms and developing sustainability conscious competences will remain a challenge (Karatzoglou, 2013). Karatzoglou (2013) suggested linking HE institutions and regional partners in pursuit of common economic, environmental, and social goals. Many opportunities to implement sustainability into HE institutions exist such as co-creation of knowledge with the stakeholders (Beynaghi et al., 2016; Deale & Barber, 2012; Koprina & Meijers, 2013; Trencher, Terada, & Yarime, 2015), real life projects in collaboration with the local community (Renfors et al., 2019; Trencher et al., 2015), or partnerships with industry experts outside the institution (Deale & Barber, 2012).

Previous literature has examined sustainable development (SD) in HE institutions (Beynaghi et al., 2016; Drayson, 2015; Drayson, Bone, Agombar, & Kemp, 2014; Lozano,

Lozano, Mulder, Huisingh, & Waas, 2013) and education for sustainable development (ESD) (Jones, Trier, & Richards, 2008; Karatzoglou, 2013; Khataybeh, Subbarini, & Shurman, 2010; Lozano et al., 2013; Zeegers & Clark, 2013) to reorient existing education to address sustainability issues in a holistic manner that respects and serves all three pillars of sustainability (Chaplin & Wyton, 2014; Jones et al., 2008; Karatzoglou, 2013; Lozano et al., 2013; Zeegers & Clark, 2013). These three pillars (environmental, economic, and social) have been tested at length finding that, of the three, environmental is considered first (Chaplin & Wyton, 2014; Drayson et al., 2014; Stir, 2006; Yuan & Zuo, 2013), economic is the ‘most elusive’, and social is the most underdeveloped and, subsequently, under-assessed (Zwickle, Koontz, Slagle, & Bruskotter, 2014). From an economic perspective, HE institutions have largely ignored this pillar except for keeping sustainability costs within a budget (Karatzoglou, 2013), yet when forced to make decisions in real life, people choose social and economic priorities over environmental ones (Kopnina & Meijers, 2013). Students may be willing to recycle, but would not be willing to participate in long term commitments that demand too much time, effort, or money (Chaplin & Wyton, 2014; Stir, 2006). Hence, a greater focus on the economic and social pillars could be an opportunity for HE institutions to embrace.

### **Implementing Sustainability in HE Institutions**

Previous literature has suggested that the implementation of sustainability in HE institutions can be done on three levels: Individual, institutional, and instrumental (Swaim, Maloni, Napshin, & Henley, 2014). On an individual level, research has examined the opportunities and challenges of individuals (students) and individuals (faculty). Throughout their studies, students who demonstrate positive attitudes towards sustainability (Swaim et al., 2014) and are ready to address pertinent social issues can be identified and prepared as future *change agents* (Decamps, Barbat, Carteron, Hands, & Parkes, 2017; Kay, Dunne, &

Hutchinsin, 2010; Verhulst & Lambrechts, 2015), *agents of community transformation* (Chile & Black, 2015), or *engaged citizens* (Kurland et al., 2010). However, if students suspect that the engagement with sustainability is forced or insincere (Gonzalez-Rodriguez, Diaz-Fernandez, Pawlak, & Simonetti, 2013) or do not see the bigger picture in relation to society at large or the difference they can make (Cani, 2015), they will become cynical, doubtful, uninterested, and, subsequently, disengaged, and disillusioned.

Faculty may be apathetic or overwhelmed by sustainability initiatives or the obligation to include sustainability concepts into an already full schedule if they are not motivated or don't believe (Swaim et al., 2014) or feel that sustainability is not relevant to their discipline (Cooper, Parkes, & Blewitt, 2014). Faculty may lack training (Lozano et al., 2015) or fear that introducing sustainability would involve a large amount of time, energy, and personal commitment (Hoover & Harder, 2015). By contrary, faculty who are prepared to lead sustainability initiatives are referred to as *champions* (Hopkinson & James, 2010; Verhulst & Lambrechts, 2015), *change agents* (Mochizuki & Fadeeva, 2010; Seto-Pamie & Papaoikonomou, 2016), and *change leaders* (Kurland et al., 2010) and acquire personal and professional satisfaction (Hoover & Harder, 2015) by making a significant difference in social sustainability.

To combat the issue of overwhelmed faculty, an institutional approach to sustainability initiatives could be the solution. Previous research has found that appreciation from university administration and colleagues play a significant role in encouraging faculty to design sustainable curriculum (Muller-Christ et al., 2014). Indeed, sustainability strategies built with consideration of and contributions from all of the HE institution's members could resolve or alleviate some of the issues. This could be done through genuine dialogue (Hoover & Harder, 2015; Muller-Christ et al., 2014), collaboration, and a shared vision (Clark & Button, 2011). Nonetheless, when implementing sustainability on an institutional level, there

are some potential challenges as well such as trying to find consensus for definitions of sustainability. Without a common definition and strategy of sustainability, it is difficult to discuss its implementation (Mochizuki & Fadeeva, 2010) much less persuading others to engage with it.

The instrumental level of implementing sustainability, i.e. what happens in and outside of the classroom, was also discussed in the literature. Students are motivated to engage in sustainable actions in daily life, outside of the classroom (Swaim et al., 2014), often through reflection on their role as members of the global community (Nagel, Pappas, & Pierrakos, 2012; Tuma & Sisson, 2019). New courses, modules, and programs on sustainability have been developed to promote shared learning through sustainable initiatives (Clark & Button, 2011). These courses are interdisciplinary and/or multidisciplinary in nature and encourage engagement through real-world, and work-based contextual environments (Clark & Button, 2011; Hopkinson & James, 2010; Kurland et al., 2010; Mochizuki & Fadeeva, 2010; Muller-Christ et al., 2014; Renfors et al., 2019).

In HE institutions in Switzerland particularly in hospitality and tourism studies, for the most part, sustainability is addressed in a single course format or through electives. Unlike larger HE institutions that house many disciplines or schools which offer full sustainability programs and degrees, Switzerland has yet to reach this greater objective. In a study based on a content analysis of the official university websites of the 50 top ranked hospitality/tourism/leisure programs by Quacquarelli Symonds Limited (QS) world rankings, Zizka (2019) found that only 74% of the top 50 institutions in this study currently have mandatory sustainability or sustainability-related courses. Further, most hospitality/tourism/leisure programs (74%) offer between one and 5 sustainability or sustainability-related courses followed by six to ten courses (16%) and eleven to fifteen courses (8%) (Zizka, 2019). Six Swiss hospitality management schools rank in the top 20, yet



offer from 2 to 9 sustainability individual courses or electives and no full program, certificate, or degree in sustainability.

There are several explanations to explain the lack of sustainability programs in Swiss hospitality management education. One of the reasons why interdisciplinary projects are not incorporated frequently in the program could be that hospitality professors that may not know how to create truly multidisciplinary projects that connect numerous disciplines (Kurland et al., 2010), how to evaluate projects of this magnitude, or how to marry hospitality concepts with emerging sustainability considerations. Further, there is no guarantee that sustainability concepts learned from multidisciplinary projects will be replicated in real life situations (Tormo-Carbo, Oltra, Segui-Mas, & Klimkiewicz, 2016). Faculty may feel overwhelmed with full course loads (Cooper, Parkes, & Blewitt, 2014) as freeing up someone to lead sustainability initiatives means that someone else will have to do their job (Hoover & Harder, 2015). Finally, larger universities with many programs, disciplines, and resources have a clear advantage when it comes to offering sustainability or sustainability-related courses to their student bodies (Zizka, 2019). The relatively small size of Swiss hospitality management schools as compared to the competition may be a contributing factor.

### **Sustainability and HE Stakeholders**

The topic of sustainability is one example of a global issue that can help to unite stakeholders who share similar values under a common cause or incite heated debates amongst stakeholder groups. Some stakeholders may be territorial, resist change, or believe it is someone else's responsibility to implement sustainability initiatives. For example, shareholders want to make profit and are concerned about the initial, often high, expenses in implementing sustainable practices; the employees may be interested in sustainability but are obliged to follow the standard operating procedures (SOPs) of the company for which they work; the customers may state they are willing to pay more for sustainable options, yet do not

do so in reality. The latter is an example of what is referred to as the value-action gap (Chaplin & Wyton, 2014; Drayson, 2015; Savelyeva & Douglas, 2017), the attitude-behavior gap (Ruhanen & Bowles, 2019), or the rhetoric-behavior gap (Kopnina & Meijers, 2013) in which the stakeholders self-proclaim their belief in sustainability initiatives or causes, openly state their support of sustainable actions, but do not actually practice these behaviors in the real world. The first step toward bridging these gaps derives from education at all levels but perhaps most significantly within HE institutions where today's students are preparing to become future leaders in all domains.

In HE institutions, stakeholders include faculty and students as well as administrative staff, investors/donators, alumni, employers, and the local community. Between these stakeholders, there are varied reactions to implementing sustainability in HE institutions. Take the example of social sustainability projects that focus on community engagement by linking the HE institution with the local community. While faculty members may believe that social sustainability and engagement with the local community is critical for transforming student perceptions and practices (Franz, Childers, & Sanderline, 2012), they may have no desire, time, or experience to implement these practices into their own courses (Mehta et al., 2015). The community may welcome the participation of the local HE institutions to address a pressing issue (Gorski et al., 2015), but may disagree on the role the HE institution may take or the contribution the HE institution is making. Thus, even with a potentially positive sustainability initiative to help the local community, stakeholder involvement and attitudes can halt a project before it begins.

For students in HE institutions, sustainability initiatives may seem abstract. While they may initially seem keen on embarking upon a sustainability project that involves real-world application of theory, helping others, and improving multicultural awareness through community engagement projects (Franz et al., 2012; Gorski, Oveysekare, Yarnal, & Mehta,

2015; Tuma & Sisson, 2019), they may become disillusioned when leaving an unfinished project (Gorski et al., 2015) or being unable to follow a project over a longer time period. Further, students may question how the project relates to their studies (Ryan, 2017). After all, if students cannot see the purpose or relevance of a topic, they are less inclined to engage. For this reason, our study focuses on this important stakeholder group in HE institutions, the students, to gauge how much they know about sustainability and how important they perceive sustainability to be. The first step to ensuring engagement with sustainability is to understand what students know (and do not know) and how they feel about it.

### **Sustainability Tests Used to Gauge Sustainability Literacy**

In the past few decades, sustainability assessment tools have been created for use in HE institutions, although most assess the institution itself through sustainability or corporate social responsibility (CSR) reporting (Bullock & Wilder, 2016; Ceulemans, Lozano, & Alonso-Almeida, 2015; Moon & Orlitzky, 2011; Yarime & Tanaka, 2012). Few sustainability assessment tools consider external stakeholder voice in the reporting process (Ceulemans et al., 2015), and even fewer attempt to gauge the skills and knowledge students gain through sustainability education (Yarime & Tanaka, 2012). The Sulitest assesses the level of knowledge in economic, social, and environmental responsibility in HE students at all levels throughout the world to drive changes in pedagogy and curriculum toward a more sustainable future (Decamps et al., 2017). Its scope includes addressing existing knowledge of the challenges facing society and the planet through general knowledge assessment of social, environmental, and economic issues. For this research project, we have chosen the Sulitest to ascertain what our students know about sustainability and to raise awareness about sustainability challenges they may be facing in the future workplace.

#### **Research Questions:**

In this paper, we address the following four research questions:

RQ1: How much do first semester students in an international hospitality management school know about global sustainability and where did they gain their knowledge about sustainability prior to their HE studies?

RQ2: How interested are first semester students in learning about sustainability in their current academic program?

RQ3: What are first semester students' perceptions about the importance of sustainability in their education and for their future careers?

RQ4: How can the gaps in sustainability literacy for students in HE institutions be addressed?

### **Methodology**

For our study, students in their first semester in both the English and French sections of an international hospitality management program in Switzerland were asked to complete the Sulitest during class time. The course name is Sustainable Hospitality Culture (in French: Culture de l'Hospitalité Durable). The main purpose of this introductory course to sustainable hospitality culture is to provide a deeper insight into today's hospitality and tourism challenges and to reflect on their sustainable solutions. The course contains 18 hours (precisely 17.5 hours of contact time) divided in 7 sessions of 2 and a half hours. The course is an intensive one – a 2 and a half hour class every day during the first week, and 2 more classes the week after, followed by a summative final exam on IPad (1 hour).

Sulitest is an open online training and assessment tool designed to assess and improve sustainability literacy. Endorsed by the United Nations and based on collaboration of over 300 volunteers from UN agencies, academic communities, and civil society stakeholders, this tool aims to be internationally recognized and locally relevant by addressing global as well as local issues (Descamps, 2017). According to the report "Mapping Awareness of the Global Goals" (2017) presented at the UN Conference entitled "Higher Education Institutions- Key Drivers of the Sustainable Development Goals", the core mission of the Sulitest Association

is “to provide and develop a tool to make sure that current and future decision makers have sufficient awareness on sustainability challenges to take informed and effective decisions and to collectively build a sustainable future” (Sulitest.org). The Core Module of the Sulitest proposes 30 questions randomly selected from the question bank. This core module is common to every country, covering global issues and allowing organizations and candidates to compare scores at a worldwide level. Additionally, one of the key learning objectives of sustainability integration in higher education is to provide future graduates with sufficient knowledge and skills to face global challenges and conduct change for a sustainable future. In order to support, develop or improve pedagogical practices, the ability to monitor their impact thereof is crucial.

To gauge students’ existing knowledge about sustainability, the Sulitest was administered twice with each class between September 2018 and January 2019 as a Pre-Test and a Post-Test. Students had approximately 25-30 minutes to complete the individual test anonymously. The objective of these 2 tests (Pre and Post) was to evaluate students’ overall Sustainable Literacy at the beginning of the course and also at the end of the course. The test is divided into four main categories: 1) Sustainable humanity and ecosystems on planet earth, which includes ecological and social perspectives; 2) Global and local human-constructed systems to answer humanity’s needs, which includes social and economic systems, such as governance, education, water, energy, food and other systems; 3) Transitions towards sustainability, with examples and concepts regarding how change happens; and 4) Role to play, with examples of individual & systemic changes, which includes awareness of roles and impacts, and how an individual can effectively create change (“Raising and Mapping Awareness of the Global Goals”, 2018).

In the same class, students completed a short online survey we developed to establish where they had gained their previous knowledge about sustainability, i.e. from school, family,

friends, media, or work. They were also asked to rate on a 10-point Likert scale how knowledgeable they are about sustainability, the importance of sustainability in their HE experience and to their future career, and their overall interest in learning about sustainability during their studies.

In our particular study, between the two Sulitest sessions, students had a general introduction to sustainability topics (theory) such as tourism as a complex phenomenon, sustainability as an emergent trend, toward a sustainable hospitality culture, and cultural sustainability through gastronomy. Each topic was organized as master classes with various in-class exercises. Students were also given 30-minute guided research on the topic through the Internet and CSR/Sustainability reports and publications.

#### Examples for in-class exercise:

1. In small groups students develop a mini speech (5 minutes) about major hotel chains sustainable practices (Marriot; Hilton; Accor; Six Senses...etc.).
2. In small groups, students develop a mini speech (5 minutes) about Ecolabels in tourism, hospitality, and in the food sector (agriculture).

### **Results**

According to the official school statistics for the autumn semester 2018, the AP (first semester) population consists of 461 enrolled students. Of those students, 60.7% are female. In the total student population, 29.2% of students are Swiss, 19% are French and the rest represent more than 100 nationalities. Students who choose to follow the Bachelors' Program in the English section represent 61.7% of the total student population. In total, 315 students completed the pre-test Sulitest and 215 the post-test Sulitest. Prior to taking the Sulitest, students were asked to respond to a 5-question survey regarding sustainability. In the first question, students were asked to rate their perceived knowledge of sustainability on a scale from 1 (no knowledge at all) to 10 (extremely knowledgeable). As seen in Figure 1, 70.4% of first semester students rated their sustainability knowledge between 5 and 8 on this scale

suggesting that they perceive themselves as having average to above average knowledge upon starting their undergraduate studies.

*INSERT FIGURE 1 HERE*

Students were also asked where they gained their existing knowledge of sustainability (See Figure 2).

*INSERT FIGURE 2 HERE*

Not surprisingly, 40% of these first semester students learned about sustainability in school prior to entering this HE institution. This was followed by media (28.1%) and parents (21.7%). Friends and previous work experience had the lowest effect on student knowledge.

When asked to rate their interest in learning about sustainability in their academic programs (1= not interested at all to 10= extremely interested), student responses were quite high (See Figure 3).

*INSERT FIGURE 3 HERE*

As seen in Figure 3, more than half the total students (58%) rated their interest in learning about sustainability as 8 and above. Less than 5% (4.5%) rated their interest as 4 or below suggesting that overall interest for students in this hospitality management program is high. One of the reasons for wanting to learn about sustainability could be linked to the importance they place on it for both their studies and future careers. Figures 4 and 5 show the results from these questions where students rated the importance in higher education and for their professional careers on a scale of 1-10 (1=not important at all to 10=extremely important).

*INSERT FIGURE 4 HERE*

*INSERT FIGURE 5 HERE*

As seen in Figure 4, many students rated the importance of sustainability in higher education as extremely important (39.1%). In fact, 92.5% rated the importance as six or above

on the 10-point scale. Only less than 8% (7.3%) ranked it a five or below. In regards to the importance of sustainability for their future professional careers (See Figure 5), the results are quite similar. Less than 4% (3.7%) rated the importance of sustainability five or below, while 96.3% rated it six and above. Over 67% rated its importance for their professional lives as a nine or ten on the 10-point scale compared to 56.8% for its importance to higher education.

### **Sulitest Results**

In the beginning of the first lesson of their Sustainable Hospitality Culture course, students are given the log in code to access and complete the Sulitest in class. The responses are anonymous although the students can access their results following the test. The results of the pre-tests are found on Table 1.

*INSERT TABLE 1 HERE*

As seen in Table 1, all three groups in our study performed better overall than the Swiss national average, only scoring lower (for two groups) in the category *knowledge- role to play, individual & systemic change*. Of the groups, groups A and B scored best in the category *knowledge-sustainable humanity and ecosystems* and Group C scored highest in the category *knowledge - transition towards sustainability*. All three groups scored worst in in the category *knowledge- role to play, individual & systemic change*. The three groups overall average was quite similar (47%, 51%, and 50% respectively) with each group performing better than the other two in two categories. Only Group C in one category *knowledge - transition towards sustainability* scored higher than the worldwide average.

*INSERT TABLE 2 HERE*

The post-test results show great improvements for all three groups who have now exceeded the worldwide averages. All three groups improved by 9 to 11% compared to the pre-test results. Further, all groups exceeded the country averages in all categories ranging from 8% higher than the country average to a whopping 22% recorded by Group A in the



category *knowledge - transition towards sustainability*. In all categories and for all three groups, the scores exceeded the worldwide average with the exception of Group A in the category *knowledge - role to play, individual & systemic change* and, even there, they scored only 1% lower than the worldwide average. Of the four categories, students recorded the highest scores on the first category, *knowledge - sustainable humanity and ecosystems*. Groups A and C had the lowest score in the category *knowledge - role to play, individual & systemic change* while Group B's lowest scores resulted in a tie between *knowledge - role to play, individual & systemic change* and *knowledge - transition towards sustainability*.

To further analyze the specific topics the Sulitest addressed, Tables 3 and 4 provide the results of the pre and post-tests by tag and by group.

*INSERT TABLE 3 HERE*

From the pre-test results by tag and by group, no blatant anomalies can be spotted. Each tag shows higher and lower results for each group making generalizations more complicated. From Table 3, we can see that the tag *pollution* had the smallest difference between the groups at 5%. The tags *biodiversity*, *global interdependence and universal responsibility*, and *production and consumption systems* followed with a difference between the three groups at 6%. The greatest difference between the three groups was for the tags *decision making process* and *labor practices* at 38 points, followed by *international governance and institutions* at 35 points, *formal education and life-long learning* at 27 points, and *democratic institutions at all levels* at 26 points. Group A scored highest in the tag *formal education and life-long learning* (73%) and tied for lowest in the tags *democratic institutions at all levels* and *decision making process* (14%). For Group B, the tag *international governance and institutions* was highest at 81%, while *labor practices* scored lowest at 25%. The tag with the highest score for Group C was for the tag *indicators* at 69% and the lowest score was for the tag *health and basic needs* (28%). Of the three groups, Group A had the

largest difference between high and low scores at 59 points, while Group C had the lowest difference in response at 41 points.

*INSERT TABLE 4 HERE*

From the post-test results by group and by tag, the tags with the lowest difference between groups were *stakeholder/communities involvement* and *formal education and lifelong learning* (5 points each). However, the percentage for *stakeholder/communities involvement* was quite low in the mid-fifties, while the percentage for *formal education and lifelong learning* was in the mid-seventies. The latter differed greatly from the pre-test where the difference between the three groups for *formal education and lifelong learning* was 27 points. The tags with the greatest difference between groups were *democratic institutions at all levels* (41), *discrimination of all sorts* (53), and *water and sanitation* (55). The tag *democratic institutions at all levels* showed a much higher gap in the post-test (41) from the difference in the pre-test (26 points). Group A and Group B reported the highest percentage of correct answers for the tag *indicators* (at 80% and 79% respectively), while Group C listed *energy* as the highest (84%). The latter was the highest percentage of all three groups and tags. The lowest percentages from each group were *democratic institutions at all levels*, and *discrimination of all sorts* (18%) for Group A, *water and sanitation* (17%) for Group B, and *democratic institutions at all levels* (10%) for Group C. The lowest result from Group C was also the lowest result of all groups and tags combined.

*INSERT TABLE 5 HERE*

To compare across all three groups, only the tags in common with the three groups were listed in Table 5. When comparing all groups to the results in the pre and post-tests, half of the tags showed improvement for all three groups, 5 tags showed where two groups had done worse than the pre-test, 4 tags showed where one group had done worse, and no tag showed lower scores between pre and post-test for all three groups. The scores that improved

ranged from 1% (*climate*) to 52%, (*energy*) whilst the scores that went down ranged from 1% (*inequality and poverty*) to 32% (*water and sanitation*). With all group and tags combined, 75% of the tags showed a positive improvement from pre to post-test.

### Discussion

While students who participated in this study derived from both language sections enrolled in this international hospitality management school (English and French), Groups A and C were students who study in the English section. However, studying in the English section does not mean the student is British or American, nor that the student is a native Anglophone. The diverse student population of over 100 nationalities ensures that these results are not those of one or two cultures; rather, they are a mix of many nationalities and cultures. Further, many Francophones choose to complete their degree in the English section to have a diploma which may be perceived as more international when seeking employment.

According to the survey results of their perceived knowledge of sustainability, 70.4% believed they had average to above average knowledge of sustainability upon entering this HE institution. The results from the Sulitest confirm this. As seen in the global results of the pre-test, all three groups recorded high scores in the category *knowledge-sustainable humanity and ecosystems*. This aligns with the literature which suggests that the environmental pillar of sustainability is most often the focus of previous studies or personal knowledge (Chaplin & Wyton, 2014; Drayson et al., 2014; Stir, 2006; Yuan & Zuo, 2013). All three groups scored worst on the category *knowledge- role to play, individual & systemic change*. This could suggest a need to focus on the potential that each student has to make a difference in the world. The three groups' overall average was quite similar (47%, 51%, and 50% respectively) thus reflecting a similar level of pre-existing knowledge regarding sustainability. As only Group C in one category *knowledge - transition towards sustainability* scored higher than the worldwide average, their scores were quite close. Thus, we can assume that the students in

this study know more than the typical Swiss student, but less than the international population worldwide.

Regarding the tag specific results for the pre-test, the greatest difference in scores between the three groups was for the tags *decision making process* and *labor practices*, *international governance and institutions*, *formal education and life-long learning*, and *democratic institutions at all levels*. As these topics are aligned with policy making, the workplace, and governmental initiatives, students may have had less exposure to these topics prior to entering this HE institution due to their age or lack of professional experience. As seen in Figure 2, students reported learning sustainability in the workplace as the lowest of the five options (.6%). Further, the first semester of their HE experience may be too soon to know the importance of *formal education and life-long learning*. As confirmed in the global results, the tags for more environmental topics such as *pollution*, *biodiversity*, *global interdependence and universal responsibility*, and *production and consumption systems* recorded the smallest differences between groups. This may be explained by the types of information, from news sources, to family or friends, or the Internet that students were exposed to prior to entering the HE institution. As seen in Figure 2, media does provide these students with sustainability knowledge as 28.1% reported learning about sustainability from the media. Further, the political situation or most newsworthy topics in their respective countries may affect how much students know about these topics.

For the post-test results, the results are encouraging as students in all three groups not only improved, but exceeded the worldwide averages overall. These results seem to confirm that the intensive course they took which was focused on sustainability topics added to their preexisting knowledge. This may suggest that one course can make a difference in students' sustainability literacy. While all groups exceeded the country averages in all categories, this result is difficult to analyze. There may be a relationship between the course these students

took and the topics they covered in class. As the course does not specifically target the SDGs nor the specific materials covered in the Sulitest, the specific focus on sustainability in this class seems to have improved students' knowledge about sustainability in general. This finding could dispel some negative perceptions from the literature that one course can't make a difference or that a professor would have to completely change their curriculum or learning objectives to effectively implement sustainability into their courses. Nonetheless, this finding does not confirm long-term retention nor authentic engagement of sustainability principles. Students may have worked hard on learning about the topic of sustainability simply to pass the course without planning to replicate this behavior in real life.

Regarding the tag specific results for the post-test, the tags with the lowest difference between groups were *stakeholder/communities involvement* and *formal education and lifelong learning*. Compared to the pre-test results by tag, the tag *formal education and life-long learning* seems to have the greatest change as it was one of the greatest differences in the pre-test but one of the least different in the post-test. One of the tags with the greatest difference between groups was *democratic institutions at all levels* which was similar for the pre-test. What is interesting, however, is that Group B (French section students) scored higher in this category in both the pre and post-test sessions. This could suggest that those deriving from a more homogenous culture may have more similar experiences and thus more similar results. Unlike the pre-test results by tag, the post-test did not reflect the same level of sustainability literacy across groups for environmental topics only; rather, the results seemed more evenly spread across all categories and groups.

The results from Sulitest sessions prior to this study have aided the developers to identify topics for which higher education seems to play a pedagogical role in improving the average score. From the Sulitest results worldwide, for example, *trends & key figures on the social pillar of sustainability*, as well as *fair operating practices, labor practices* and

*consumer issues* are characterized by lower scores (Carteron & Decamps, 2014). Some topics such as *founding principles (basic definitions)*, *social trends and key figures* and *organizational governance* are characterized by quite similar level of sustainability literacy between candidates; whereas other topics such as *economic trends and key figures*, *environment*, *human rights / labor practices* and *consumer issues* are characterized by important gaps between the respondents (Carteron & Decamps, 2014).

To respond to the research questions:

RQ1: How much do first semester students in an international hospitality management school know about global sustainability and where did they gain their knowledge about sustainability prior to their HE studies?

As seen in the results, our students scored higher than the national average and, in the majority of cases, the world average. This suggests that our students enter HE institutions with some sustainability literacy which has been learned prior to their arrival at our school. From the online survey results, we found that most students have learned about sustainability from school or the media, followed by parents or friends. By conducting the Sulitest with students in the preparatory semester, our results reflect what existing knowledge they have and what one course specifically focused on sustainability could do to improve their knowledge. This is exciting and promising for other HE institutions as well. If students can improve their scores after one course, albeit slightly, there is potential to improve overall sustainability knowledge, and, subsequently, engagement, during their time in HE. For programs that embed sustainability principles into the curriculum and as part of the HE institution's strategy, the opportunities for authentic engagement could be even greater.

RQ2: How interested are first semester students in learning about sustainability in their current academic program?

The high scores for self-reported interest in learning about sustainability in this academic program are encouraging. Student results have confirmed previous literature which stated that it is one of the roles, even obligations, of universities to include sustainability into their programs to create change agents for the future. First semester students in an international hospitality school in Switzerland are interested in learning about sustainability. As they derive from over 100 different nationalities, there is little reason to think that other schools would not find similar interest from their students as well. This study has demonstrated their clear interest; hence, the next step should be to ensure sustainability is taking its appropriate place in the curriculum and on campus.

RQ3: What are first semester students' perceptions about the importance of sustainability in their education and for their future careers?

The results from the student survey were quite positive in regards to the importance of sustainability in higher education and for their future careers. While 23% rated their interest in learning about sustainability as extremely high (10 on the Likert scale), 39.1% of these students rated the importance for their education and 46.5% for their professional careers as extremely important (10 on the Likert scale). If the students are interested in learning about sustainability and they believe it is of vital importance for both their educational and professional futures, it is the responsibility of HE institutions to include sustainability at the individual, instrumental, and institutional levels of education as stated in previous literature.

RQ4: How can the gaps in sustainability literacy for students in HE institutions be addressed?

Previous studies suggested the many possible ways of integrating sustainability into HE institutions, from embedding sustainability into many or all courses to specific courses, electives, certificates, or programs dedicated to sustainability (Deale & Barber, 2012; Drayson et al., 2014; Stir, 2006; Yuan & Zuo, 2013). In this study, we have shown that one course can make a difference, if only in the short term. While this is a positive result and offers hope for

HE institutions, the conclusion must be considered with caution. There is no way from this study or others to our knowledge to gauge how much students retain after a course is completed nor their intention to replicate sustainable actions in real-life settings. Some potential solutions may be to link course content with specific SDGs or use the Sulitest as a base for further study. There is a clear need for commitment from all hospitality HE institutions' stakeholders to ensure that sustainability is part of the overall strategy. This does not change the fact that the world averages are relatively low, in the mid-fifties, and that the efforts necessary are that of a global scale, not that of one class in one HE institution.

### **Implications and Recommendations**

Sustainability in HE continues to be a subject wrought with inconsistencies regarding how, how much, and when to implement it into hospitality, tourism, or leisure programs (Zizka, 2019). In our study, we chose the Sulitest as the starting point to gauge hospitality students' sustainability literacy. From the literature, it was clear that one of the key roles of HE institutions is to prepare today's students to be future leaders (Seto-Pamies & Papaoikonomou, 2016; Stir, 2006; Zeegers & Clark, 2013) who will bring positive social change through, amongst other topics, sustainability practices and initiatives. By gauging students' existing knowledge and building on that knowledge, HE institutions can prepare targeted curriculum for teaching about sustainability to encourage authentic engagement and reduce the value-action gap discussed earlier (Chaplin & Wyton, 2014; Drayson, 2015; Savelyeva & Douglas, 2017). From the results, we have established that first semester students in this international hospitality management program show strong interest in learning about sustainability (58% rated their interest in learning about sustainability as eight or above) and rate its importance in HE institutions and for their future careers as extremely high (75.7% and 84.4% as eight or above respectively). The students in this study are clearly willing to learn about sustainability and believe in its importance. We can use these



encouraging results to offer concrete suggestions on how to use Sulitest in the classroom and on campus to improve student knowledge and engagement. Additionally, if a short course such as the one of this study results in substantial positive change concerning sustainability knowledge, the authors of this paper expect that a longer and more sustainability-focused course could even further increase positive results.

Based on our initial findings and in line with the literature, we can address some opportunities and challenges in introducing Sulitest or any sustainability literacy tool on an individual (Decamps, Barbat, Carteron, Hands, & Parkes, 2017; Kay, Dunne, & Hutchinsin, 2010; Verhulst & Lambrechts, 2015), instrumental (Clark & Button, 2011; Hopkinson & James, 2010; Kurland et al., 2010; Mochizuki & Fadeeva, 2010; Muller-Christ et al., 2014; Tuma & Sisson, 2019), and institutional level in HE institutions (Clark & Button, 2011; Hoover & Harder, 2015; Muller-Christ et al., 2014). On an individual level, HE institutions could administer Sulitest with students or faculty to introduce the topic of sustainability; however, faculty may be reluctant if they think a ‘poor’ result would lead to repercussions and students could become disillusioned and bored if the test was administered by many teachers in many classes. On an instrumental level, new courses/modules/programs could be developed based on the topics and SDGs covered in the Sulitest, although faculty may be concerned that it does not fit in with their subject matter leading to superficial or inaccurate teaching of sustainability principles. Another instrumental opportunity lies in using the Sulitest results to strategically plan sustainability projects both on and off campus to increase student and community engagement. Nonetheless, community projects may be difficult to organize with differing goals, expectations, and objectives of the stakeholders. On an institutional level, sustainability events such as debates, guest speakers, or workshops, could be held for both students and other stakeholders where the Sulitest is administered and the results shared

between participants, although the stakeholders may not see these events as relevant in their current positions nor understand how the Sulitest results lead to authentic change.

One of the most pertinent implications we have established in this study is the necessity to improve sustainability literacy on a global scale. The fact that our students performed better than others in Switzerland and, in some cases, better than others worldwide is not reassuring. The global results are quite low. Further, while one could expect that students would score higher in a post-test than a pre-test after having followed an intensive course on sustainability, this was not the case across the board. For five of the twenty specific tags for each of the three groups, the post-test results were lower than the pre-test results. From the results of these initial three groups, five topics could be identified as topics that merit further consideration or inclusion into sustainability courses: *Decision making process*, *global interdependence and university responsibility*, *inequality and poverty*, *international governance and institutions*, and *water and sanitation*. These topics can be considered highly complex for entry-level students, hence they could be treated in a later course in the curriculum.

In any case, there is a clear need for HE institutions to integrate more sustainability education into their programs. According to the study on the top 50 hospitality/tourism/leisure programs, smaller hospitality management schools, particularly in Switzerland, have a minimal offer of sustainability courses as compared to large universities abroad (Zizka, 2019); thus, more efforts need to be made to incorporate certificates, programs, or diplomas into these schools to encourage student engagement with sustainability. As seen in the literature, this could be done through community engagement projects (Franz et al., 2012; Gorski, Oveysekare et al., 2015; Trencher et al., 2015; Tuma & Sisson, 2019), the creation of new interdisciplinary and multidisciplinary courses (Clark & Button, 2011; Hopkinson & James, 2010; Kurland et al., 2010; Mochizuki & Fadeeva, 2010; Muller-Christ et al., 2014), or

partnerships with external experts (Deale & Barber, 2012). Furthermore, HE institutions can also improve students' sustainable awareness and knowledge by integrating sustainability element in their internship evaluation. This way students will have to apply in the field their obtained theoretical knowledge on sustainability.

In industries such as hospitality or tourism where natural resources have been exploited in the past, the time has come to make changes. From all-you-can-eat buffets where much of the food is wasted to low cost air travel for weekend or day trips, there is an urgency for the hospitality industry to embrace sustainable changes. Yet, as seen in previous literature, there is a gap between wanting to make sustainable changes and actually making them (Chaplin & Wyton, 2014; Drayson, 2015; Kopnina & Meijers, 2013; Ruhanen & Bowles, 2019; Savelyeva & Douglas, 2017). Until this gap can be narrowed or eliminated, the hospitality industry will continue to be unsustainable.

As seen in this study, sustainability literacy can be improved from the first to the last day of one intensive course, but the improvement could be linked to preexisting or common knowledge and not to the actual material taught in class. The Sulitest would need to be replicated with each new semester to compare the results of this study with those of other students. Additionally, a longitudinal study would need to be conducted to gauge if students continued to improve their sustainability literacy throughout the full academic program where other courses address sustainability issues as well.

Further, the Sustainable Hospitality Culture course on which the findings of this paper was based serves as an introductory course to sustainable hospitality culture and does not focus specifically on sustainable development goals (SDGs), though mentions them implicitly. To our knowledge, there is no research project which has evaluated HE institutions' courses that focus specifically on SDGs. While some campuses are beginning to align their practices and strategies to the SDGs, no study has been found that links the specific

courses to SDGs. Perhaps in doing so, the overall averages on sustainability literacy would improve.

### **Limitations/Future Studies**

While our students generally scored higher than the Swiss averages and, in some cases, world averages for sustainability literacy in the Sulitest, we must read these results with caution. While our school has a strong population of Swiss students, the majority of our students are non-Swiss. Thus, trying to compare their results to those of the Swiss could be misleading. A future study could investigate other Swiss schools with an international population to confirm our results. In regards to the world averages, again, the results of our study are optimistic. It seems that our international students have better pre-existing knowledge of sustainability upon entry into HE studies than others worldwide. However, the world averages are not particularly high; thus, while the student sample of this study may score better, the numbers are not significantly higher and not applicable to every sustainable criteria. Future studies need to address concrete solutions for HE and more effective ways of introducing sustainability topics into HE courses to produce engaged sustainability change agents who will continue expanding their knowledge and, more importantly, applying it in real world situations.

This study focused on first semester students in one international hospitality management program in Switzerland. Future studies could focus on other hospitality management programs in Switzerland, Europe, and worldwide to gauge firstly what their students know about sustainability and, secondly, to better integrate sustainability concepts specifically linked to SDGs into their courses and programs. Studies could also be conducted on other levels of HE such as masters or doctoral degrees.

There are other limitations as well. First of all, the Sulitest does not ascertain where the pre-existing knowledge came from; rather, it gauges existing sustainability literacy. A

further study would need to test how and where these students gained their initial knowledge about sustainability. We attempted to do this by including our 5-question survey, but could elaborate upon it for a future study. Secondly, our students derive from over 100 different nationalities (as per the official website statistics from 2018). As the Sulitest is anonymous, there is no way to target one nationality's results from another. Thus, the issue of cultural differences, though potentially pertinent, cannot be tested with the Sulitest. This could be addressed in a future quantitative study where demographics could be gathered. While we tried to compare French and English sections, this, too, may be misleading. The English section comprises of most of the 100 nationalities but also includes students who are native French speakers but simply chose to do the program in English. Thus, some of the French results may be mixed in with the English results. At the risk of losing total anonymity, a future study may include the nationality factor into the test. This could be a suggestion to the Sulitest creators as they continue to update the test and platform. Finally, the Sulitest was conducted at one international hospitality management school in Switzerland that has a bilingual population. Further studies should investigate other bilingual schools to examine if their results are similar to our results.

### **Conclusion**

There is no simple solution to effectively implementing sustainability in HE institutions. While there are many levels of engagement between HE institutions and sustainability principles, and general consensus that sustainability is primordial to the future success of dealing with the most important global issues, specific models that are effective and/or innovative have yet to be developed. In fact, there is no agreement on how much or which sustainability principles should be taught even within the same discipline or program of study. The difficulty derives in addressing sustainability in many industries, in our case the hospitality industry and defining what it means in each. Further, the lack of knowledge and

interest on the part of the some of the stakeholders may make HE institutions reticent to push a sustainability agenda further. And yet push is what they must do. Students who suspect that sustainability initiatives are insincere, superficial, or underperforming will disengage with them and, subsequently, become apathetic toward these ideals. If the management in HE institutions view sustainability as part of a corporate strategy that looks good for accreditation but are not willing to invest time, money, and people in these initiatives, they will fall short of their objectives.

This study attempts to offer one potential and initial starting point for introducing sustainability into HE institutions in Switzerland. No study has been found that examines sustainability literacy in hospitality students in a pre and post-test fashion using a tool such as the Sulitest. This paper posits that the Sulitest is a valid tool for assessing sustainability knowledge in HE students. Based on the Sulitest results, faculty could adapt their courses and curriculum, produce multidisciplinary projects, and launch sustainability initiatives with the support of administration, alumni, and community stakeholders to prepare their graduates to truly become the positive change agents of the future.

## References

- Beynaghi, A., Trencher, G., Moztarzadeh, F., Mozafari, M., Maknoon, R., & Leal Filho, W. (2016). Future sustainability scenarios for universities: Moving beyond the United Nations Decade of Education for Sustainable Development. *Journal of Cleaner Production*, *112*, 3464- 3478. doi: 10.1016/j.jclepro.2015.10.117
- Broomhill, R. (2007). Corporate social responsibility: Key issues and debates. Dunstan Papers, *Don Dunstan Foundation for the Dunstan Papers Series*, 1-60. Retrieved from [www.dunstan.org.au](http://www.dunstan.org.au)
- Brower, J., & Mahajan, V. (2013). Driven to be good: A stakeholder theory perspective on the drivers of corporate social performance. *Journal of Business Ethics*, *117*, 313-331. doi: 10.1007/s10551-012-1523-z.
- Bullock, G., & Wilder, N. (2016). The comprehensiveness of competing higher education sustainability assessments. *International Journal of Sustainability in Higher Education*, *17*(3), 282-304. <https://doi.org/10.1108/IJSHE-05-2014-0078>
- Cani, R. (2015). Sustainability literature graduates: Linking education for sustainable development within higher education with the ‘skills gap’ in the employment market. *Fields: Journal of Huddersfield Student Research*, *1*(1). <http://dx.doi.org/10.5920/fields.2015.116>
- Carteron, J. C. & Décamps, A. (2014). Can Universities be sure they are producing sustainability literate graduates? One Year Report of the Sustainability Literacy Test, presented on the occasion of the UNESCO World Conference on Education for Sustainable Development, Nagoya (Japan), Nov 2014.
- Ceulemans, K., Lozano, R., & Alonso-Almeida, M. (2015). Sustainability reporting in higher education: Interconnecting the reporting process and organizational change management for sustainability. *Sustainability*, *7*, 8881-8903. doi: 10.3390/su7078881
- Chaplin, G., & Wyton, P. (2014). Student engagement with sustainability: Understanding the value-action gap. *International Journal of Sustainability in Higher Education*, *15*(4), 404- 417. doi: 10.1108/IJSHE-04-2012-0029
- Chile, L. M., & Black, X. M. (2015). University-community engagement: Case study of university social responsibility. *Education, Citizenship, and Social Justice*, *10*(3), 245-253. doi: 10.1177/1746197915607278
- Clark, B., & Button, C. (2011). Sustainability transdisciplinary education model: Interface of arts, science, and community (STEM). *International Journal of Sustainability in Higher Education*, *12*(1), 41- 54. <https://doi.org/10.1108/14676371111098294>

- Cooper, S., Parkes, C., & Blewitt, J. (2014). Can accreditation help a leopard change its spots? Social accountability and stakeholder engagement in business schools. *Accounting, Auditing & Accountability Journal*, 27(2), 234-258.  
<https://doi.org/10.1108/AAAJ-07-2012-01062>
- Deale, C. S., & Barber, N. (2012). How important is sustainability education to hospitality programs? *Journal of Teaching in Travel & Tourism*, 12(2), 165- 187. doi: 10.1080/15313220.2012.678211
- Decamps, A., Barbat, G., Carteron, J.-C., Hands, V., & Parkes, C. (2017). Sulitest: A collaborative initiative to support and assess sustainability literacy in higher education. *The International Journal of Management Education*, 15, 138-152.  
<http://dx.doi.org/10.1016/j.ijme.2017.02.006>
- Delbard, O. (2011). Social partners or full-fledged stakeholders? Trade unions and CSR in Europe (France, Germany and the UK). *Society and Business Review*, 6(3), 260-277. doi: 10.1108/17465681111171000
- Drayson, R. (2015). Student attitudes towards, and skills for, sustainable development. *The Higher Education Academy*. Retrieved from [www.heacademy.ac.uk](http://www.heacademy.ac.uk)
- Drayson, R., Bone, E., Agombar, J., & Kemp, S. (2014). Student attitudes towards and skills for sustainable development. *The Higher Education Academy*. Retrieved from [www.heacademy.ac.uk](http://www.heacademy.ac.uk)
- Franz, N., Childers, J., & Sanderlin, N. (2012). Assessing the culture of engagement on a university campus. *Journal of Community Engagement and Scholarship*, 5(2), 1- 15. Retrieved from <http://jces.ua.edu/assessing-the-culture-of-engagement-on-a-university-campus/>
- Gonzalez-Rodriguez, M. R., Diaz-Fernandez, M. C., Pawlak, M., & Simonetti, B. (2013). Perceptions of students university of corporate social responsibility. *Qualitative Quantitative*, 47, 2361- 2377. doi: 10.1007/s11135-012-9781-5
- Gorski, I., Obeysekare, E., Yarnal, C., & Mehta, K. (2015). Responsible engagement: Building a culture of concern. *Journal of Community Engagement and Scholarship*, 8(2), 1-12. Retrieved from <http://jces.ua.edu/responsible-engagement-building-a-culture-of-concern-2/>
- Harrison, J. S., & Wicks, A. C. (2013). Stakeholder theory, value, and firm performance. *Business Ethics Quarterly*, 23(1), 97-124. doi: 10.5840/beq20132314.



- Hoover, E., & Harder, M. K. (2015). What lies beneath the surface? The hidden complexities of organizational change for sustainability in higher education. *Journal of Cleaner Production*, *106*, 175- 188. <http://dx.doi.org/10.1016/j.jclepro.2014.01.081>
- Hopkinson, P., & James, P. (2010). Practical pedagogy for embedding ESD in science, technology, engineering, and mathematics curricula. *International Journal of Sustainability in Higher Education*, *11*(4), 365- 379. <https://doi.org/10.1108/14676371011077586>
- Jones, P., Trier, C. J., & Richards, J. P. (2008). Embedding education for sustainable development in higher education: A case study examining common challenges and opportunities for undergraduate programmes. *International Journal of Educational Research*, *47*, 341- 350. doi: 10.1016/j.ijer.2008.11.001
- Karatzoglou, B. (2013). An in-depth literature review of the evolving roles and contributions of universities to education for sustainable development. *Journal of Cleaner Production*, *49*, 44-53. doi: 10.1016/j.jclepro.2012.07.043
- Kay, J., Dunne, E., & Hutchinson, J. (2010). Rethinking the values of higher education- Students as change agents? *The Quality Assurance Agency for Higher Education*, 1-10. Retrieved from [www.qaa.ac.uk/students/studentengagement/undergraduate.pdf](http://www.qaa.ac.uk/students/studentengagement/undergraduate.pdf)
- Khataybeh, A. M., Subbarini, M., & Shurman, S. (2010). Education for sustainable development, an international perspective. *Procedia Social and Behavioral Sciences*, *5*, 599- 603. doi: 10.1016/j.sbspro.2010.07.149
- Kopnina, H., & Meijers, F. (2014). Education for sustainable development (ESD): Exploring theoretical and practical challenges. *International Journal of Sustainability in Higher Education*, *15*(2), 188- 207. doi: 10.1108/IJSHE-07-2012-0059
- Kurland, N. B., Michaud, K. E. H., Best, M., Wohldmann, E., Cox, H., Pontikis, K., & Vasishth, A. (2010). Overcoming silos: The role of an interdisciplinary course in shaping a sustainability network. *Academy of Management Learning & Education*, *9*(3), 457-476. Retrieved from <http://www-admn.CSUN.edu/pppm/fuel-cell.html>
- Lozano, R., Carpenter, A., & Huisingh, D. (2015). A review of ‘theories of the firm’ and their contributions to corporate sustainability. *Journal of Cleaner Production*, *106*, 430-442. doi: 10.1016/j.jclepro.2014.05.007.
- Lozano, R., Ceulemans, K., Alonso-Almeida, M., Huisingh, D., Lozano, F. J., Waas, T., Lambrechts, W., Lukman, R., & Hoge, J. (2015). A review of commitment and implementation of sustainable development in higher education: Results from a

- worldwide survey. *Journal of Cleaner Production*, 108, 1- 18. doi: 10.1016/j.jclepro.2014.09.048
- Lozano, R., Lozano, F. J., Mulder, K., Huisingh, D., & Waas, T. (2013). Advancing higher education for sustainable development: International insights and critical reflections. *Journal of Cleaner Production*, 48, 3-9. doi: 10.1016/j.jclepro.2013.03.034
- Mehta, K., Gorski, I., Liu, C., Weinstein, S., Brua, C., & Christensen, A. (2015). Expanding engagement opportunities at a large land-grant research university: The engagement ecosystem model. *Journal of Community Engagement and Scholarship*, 8(2), 44-58. Retrieved from [https://www.researchgate.net/publication/282251004\\_Expanding\\_Engagement\\_Opportunities\\_at\\_a\\_Large\\_Land-Grant\\_Research\\_University\\_The\\_Engagement\\_Ecosystem\\_Model](https://www.researchgate.net/publication/282251004_Expanding_Engagement_Opportunities_at_a_Large_Land-Grant_Research_University_The_Engagement_Ecosystem_Model)
- Mochizuki, Y., & Fadeeva, Z. (2010). Competences for sustainable development and sustainability: Significance and challenges for ESD. *International Journal of Sustainability in Higher Education*, 11(4), 391- 403. <https://doi.org/10.1108/14676371011077603>
- Moon, J., & Orlitzky, M. (2011). Corporate social responsibility and sustainability education: A trans-Atlantic comparison. *Journal of Management & Organization*, 17(5), 583-603. <https://doi.org/10.1017/S1833367200001279>
- Muller-Christ, G., Sterling, S., van Dam-Mieras, R., Adomßent, M, Fischer, D., & Rieckmann, M. (2014). The role of campus, curriculum, and community in higher education for sustainable development- A conference report. *Journal of Cleaner Production*, 62, 134-137. <https://doi.org/10.1016/j.jclepro.2013.02.029>
- Nagel, R. L., Pappas, E. C., & Pierrakos, O. (2012). On a vision to educating students in sustainability and design- the James Madison University School of Engineering approach. *Sustainability*, 4, 72- 91. doi: 10.3390/su4010072
- Raising and Mapping of the Global Goals. (2018). High level political forum on sustainable development. United Nations Headquarters, N.Y. Retrieved from <https://www.sulitest.org/hlpf2018report.pdf>
- Renfors, S.-M., Veliverronena, L., & Grinfelde, I. (2019). Developing tourism curriculum content to support international tourism growth and competitiveness: An example from the central Baltic area. *Journal of Hospitality & Tourism Education*, 1-9. <https://doi.org/10.1080/10963758.2019.1654889>

- Ryan, R. G. (2017). Social and cognitive outcomes of service learning: Results from pre-post and control group comparison. *Journal of Community Engagement and Scholarship*, 9(3), 19-34. Retrieved from EBSCOhost database.
- Ruhanen, L., & Bowles, L. (2019). Student perspectives of responsible tourism behaviour: The role of tourism education. *Journal of Hospitality & Tourism Education*, 1-11. <https://doi.org/10.1080/10963758.2019.1688160>
- Santoso, A. H., & Feliana, Y. K. (2014). The association between corporate social responsibility and corporate financial performance. *Issues in Social and Environmental Accounting*, 8(2), 82-103.
- Savelyeva, T., & Douglas, W. (2017). Global consciousness and pillars of sustainable development: A study on self-perceptions of the first-year university students. *International Journal of Sustainability in Higher Education*, 18(2), 218- 241. doi: 10.1108/IJSHE-04-2016-0063
- Seto-Pamies, D., & Papaoikonomou, E. (2016). A multi-level perspective for the integration of ethics, corporate social responsibility and sustainability (ECSRS) in management education. *Journal of Business Ethics*, 136, 523-538. doi: 10.1007/s10551-014-2535-7
- Sidiropoulos, E. (2014). Education for sustainability in business education programs: A question of value. *Journal of Cleaner Production*, 85, 472- 487. doi: 10.1016/j.jclepro.2013.10.040
- Stir, J. (2006). Restructuring teacher education for sustainability: Student involvement through a 'strengths model'. *Journal of Cleaner Production*, 14, 830- 836. doi. 10.1016/j.jclepro.2005.11.051
- Swaim, J. A., Maloni, M. J., Napshin, S. A., & Henley, A. B. (2014). Influences on student intention and behavior toward environmental sustainability. *Journal of Business Ethics*, 124, 465-484. doi: 10.1007/s10551-013-1883-z
- The sustainability literacy test: Can universities be sure they are producing sustainability literate graduates? (2014). *One year report: World Conference on Education for Sustainable Development*, Nagoya, Japan.
- Tormo-Carbo, G., Oltra, V., Segui-Mas, E., & Klimkiewicz, K. (2016). How effective are business ethics/CSR courses in higher education? *Conference Proceedings: 2<sup>nd</sup> International Conference on Higher Education Advances, HEAd- 16, Valencia, Spain.*
- Trencher, G., Terada, T., & Yarime, M. (2015). Student participation in the co-creation of knowledge and social experiments for advancing sustainability: Experiences from the

- University of Tokyo. *Current Opinion in Environmental Sustainability*, 16, 56- 63.  
doi: 10.1016/j.cosust.2015.08.001
- Tuma, L. A., & Sisson, L. G. (2019). Becoming an engaged department: Scaffolding community-based learning into the hospitality and tourism management curriculum. *Journal of Hospitality & Tourism Education*, 31(3). 173-182. doi: 10.1080/10963758.2018.1487783
- Verhulst, E., & Lambrechts, W. (2015). Fostering the incorporation of sustainable development in higher education. Lessons learned from a change management perspective. *Journal of Cleaner Production*, 106, 189-204. doi: 10.1016/j.jclepro.2014.09.049
- Yarime, M., & Tanaka, Y. (2012). The issues and methodologies in sustainability assessment tools for higher education institutions: A review of recent trends and future challenges. *Research: ESD in Higher Education, the Professions and at Home*, 6(1), 63-77. doi: 10.1177/097340821100600113
- Yuan, X., & Zuo, J. (2013). A critical assessment of higher education for sustainable development from students' perspectives: A Chinese study. *Journal of Cleaner Production*, 48, 108- 115. doi: 10.1016/j.jclepro.2012.10.041
- Zeegers, Y., & Clark, I. F. (2014). Students' perceptions of education for sustainable development. *International Journal of Sustainability in Higher Education*, 15(2), 242-253. doi: 10.1108/IJSHE-09-2012-0079
- Zizka, L. (2019). Sustainability practices in top hospitality/leisure management programs: Preparing engaged change agents. Paper presented at the *ICTR conference*, 14-15 March, Porto, Portugal.
- Zwickle, A., Koontz, T. M., Slagle, K. M., & Bruskotter, J. T. (2014). Assessing sustainability knowledge of a student population: Developing a tool to measure knowledge in the environmental, economic, and social domains. *International Journal of Sustainability in Higher Education*, 15(4), 375- 389. doi: 10.1108/IJSHE-01-2013-0008