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To cite this article: Kevin Fuchs, Rupam Konar & Dongqi Shi (23 Jul 2025): Is it time to rewrite the syllabus? Exploratory research on the role of sustainability in tourism education, Journal of Teaching in Travel & Tourism, DOI: [10.1080/15313220.2025.2531953](https://doi.org/10.1080/15313220.2025.2531953)

To link to this article: <https://doi.org/10.1080/15313220.2025.2531953>



Published online: 23 Jul 2025.



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Is it time to rewrite the syllabus? Exploratory research on the role of sustainability in tourism education

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ABSTRACT

The landscape of tourism education has matured, emphasizing sustainability's pivotal role in shaping responsible industry practices. However, there is little research on how "sustainability" is embedded within tertiary tourism programs. This research fills a gap by examining stakeholder perspectives within the curriculum at Thailand's highest-ranked tourism and hospitality program. Using an exploratory research design involving two studies, data was gathered sequentially through interviews with beneficiary- and institutional stakeholders. The first study revealed three key themes: (1) limited practical understanding, (2) lack of role models, and (3) cultural variability. The second study discovered that although academic staff acknowledges the significance of integrating sustainability, they frequently encounter challenges in incorporating it meaningfully. The implications of the research are to be carefully considered for the development of a more transformative approach to sustainability in tourism education.

ARTICLE HISTORY

Received 31 August 2024

Accepted 7 July 2025

KEYWORDS

Educational interventions; educational transformation; higher education; sustainability; sustainable education; tourism studies

1. Introduction

A notable paradigm shift has occurred based on the pivotal role of sustainability (Cavalcante et al., 2021). This shift focuses on developing tourism businesses with an approach that harmonizes economic viability, environmental stewardship, and socio-cultural responsibility (Roxas et al., 2020). The inclusion of sustainability into tourism education is becoming increasingly essential as a result of global climate change's substantial effects on the industry (Camargo & Gretzel, 2017; Farsari, 2022) as well as increasing interest for sustainable practices among individuals traveling (Baloch et al., 2023). Climate change has already affected tourism by raising sea levels, causing extreme weather, and degrading biodiversity, especially in sensitive areas (Prideaux et al., 2021). Tourists are becoming more interested in sustainable experiences, fueling the growth of ecotourism and responsible travel (Kc et al., 2022). As a result, the tourist sector must embrace sustainable practices not just to safeguard the environment, but also in order to stay competitive in a market that prioritizes sustainability (Rahman et al., 2024). Tourism

education is critically important in training future leaders to drive this shift in tourism (Maneethai, 2025).

As tourism destinations deal with the complex impacts of global tourism, higher education institutions recognize the industry demand to equip future professionals with the knowledge and skills necessary to navigate a landscape where environmental, sociocultural, and economic considerations converge (Kopnina, 2020). By incorporating sustainability into the curriculum, colleges and universities equip graduates with an understanding and expertise needed to effectively address environmental and socio-economic concerns (World Tourism Organization, 2023). This is consistent with global frameworks such as the United Nations' Sustainable Development Goals (SDGs), which emphasize responsible tourism as critical to attaining larger goals for sustainability. Moreover, the discourse surrounding sustainability has gained considerable attention, reflecting an industry-wide acknowledgment of its significance (Nunkoo et al., 2023). However, despite this heightened awareness, a visible gap exists between attitudes toward sustainable tourism development and action yielding tangible results (Tölkes, 2020). At the forefront of fostering a more sustainable approach to tourism, tourism education assumes a central role in shaping tomorrow's workforce through education (Kopnina, 2020).

The evolution of tourism education has been marked by a thorough turn toward sustainability, aligning with global imperatives (e.g., the United Nations' Sustainable Development Goals) for responsible and ethical practices in the tourism industry (Rahman et al., 2024). The conceptualization of sustainability in the context of tourism education extends beyond the integration of environmental concerns (Tomasi et al., 2020; Rinaldi et al., 2022). Although sustainability in tourism is often taken as a synonym for pressing the environment and its ecosystems (Jeronen, 2023), sustainable tourism encompasses a holistic approach that puts the interconnectedness of economic viability, cultural preservation, and environmental stewardship at its center (Roxas et al., 2020). The shift toward sustainability is not simply an educational trend; it is a strategic response to the evolving dynamics of the tourism industry, acknowledging its role as a catalyst for positive change (Higgins-Desbiolles, 2020). While there is a visible shift toward embedding sustainability in tourism education, the extent and effectiveness of its integration remain understudied (Cotterell et al., 2021; Edelman, 2020; Handler & Tan, 2022).

Despite the increasing emphasis on sustainability in tourism education, existing research tends to focus predominantly on curriculum content, theoretical frameworks, or institutional commitments at a policy level (Cotterell et al., 2021; Edelman, 2020). However, there remains limited empirical investigation into how sustainability is experienced, understood, and enacted by key educational stakeholders. Moreover, few studies capture both student and educator perspectives on the actual embedding of sustainability within tourism curricula, which is essential for assessing its effectiveness and identifying actionable improvements (Boley, 2011).

To address this shortfall, the present study explores how sustainability is embedded in tourism education from the perspective of both students and educators within Thailand's leading tourism program. Thailand, a leading global tourism destination, heavily relies on its tourism and hospitality sector, which contributes 11.5% of its GDP and 17.5% of total employment (Soh et al., 2024). Despite its economic significance, the rapid growth of tourism has led to pressing

challenges such as resource overconsumption, pollution, and habitat destruction (Uddin et al., 2024). These issues underscore the urgent need for sustainability awareness and education within the industry. While the government and academics have increasingly emphasized the integration of sustainability into tourism education, research systematically addressing this in Thailand's context remains limited.

1.1. Research rationale and study objectives

This study seeks to bridge the existing gap in the literature by examining stakeholder perspectives to embedding sustainability within the curriculum at Thailand's highest-ranked tourism program. Further, the study explores the perceptions of key stakeholders – the students and educators. As direct stakeholders, both groups interact closely with higher education institutions. Their values and evaluations play a crucial role in co-designing and co-delivering the educational services offered by institutions (Cavallone et al., 2020). In tourism education, curriculum design profoundly impacts students' readiness for their careers (Lee et al., 2021). According to constructivist learning theory, learning is an active process where educators serve as facilitators, guiding students to actively engage in their own learning journey. This approach emphasizes the importance of incorporating students' voices in the development of relevant and effective curricula (Pande & Bharathi, 2020).

Edelheim (2020) argues that scholarly investigations should include more “lived experiences” rather than following theory on its own (p. 547). The voices of students, as recipients of this educational paradigm, provide insights into the effectiveness of sustainability integration. Simultaneously, the role of educators emerges as a critical aspect, influencing the dissemination and assimilation of sustainability principles within the educational framework (Timm & Barth, 2021). Empirically exploring these stakeholder perceptions aims to inform educational practices aligned with evolving needs in the tourism industry. The practical implications of the study have the potential to promote a workforce that is prepared to navigate the different layers of a responsible and sustainable future. Moreover, the results of the study will advance the discourse about sustainability in tourism education.

In the context of this study, the terms stakeholders have been defined as beneficiary stakeholders (from here forth, external stakeholders) and institutional stakeholders (from here forth, internal stakeholders) (Cavallone et al., 2020). The former refers to current students who benefit from the educational services provided by the institution, while the latter refers to academic staff, who are directly involved in the development of the curricula and teaching operations (Ezeuduji et al., 2023). Eventually, the research aims of achieving the following research objectives:

- To examine the perceptions of tourism students regarding the inclusion of sustainability topics in their curriculum and assess their level of awareness about sustainable practices
- To examine the role of educators in promoting sustainability and assess their perception of the effectiveness of current teaching methods in conveying sustainable concepts

As the global call for responsible practices echoes through initiatives like the Sustainable Development Goals, education emerged as the cornerstone for shaping conscientious professionals in the industry (Fennell & Garrod, 2022). Higher education institutions in Thailand acknowledge the imperative to groom a generation of future graduates who can navigate the tourism sector sustainably (Fuchs et al., 2024). Subsequently, this study is driven by the primary question of how sustainability manifests in the curriculum of a Thai tourism education program and attempts to examine the perceptions of key stakeholders – students and educators.

1.2. Tourism and the need for sustainability

As global tourism continues to grow, so does its negative impact on the environment in perpetual (Han, 2021). Therefore, new approaches to enhance the sustainability of tourism are urgently needed (Higgins-Desbiolles, 2020). Scholars and practitioners alike are increasingly recognizing the need to balance the economic benefits of tourism with the preservation of natural and cultural resources (Schönherr et al., 2023). There is a relative agreement that addressing prevalent and critical issues pivots on changing human behaviors to foster environmental sustainability (Jans, 2021). This led to the emergence of sustainable tourism as a critical area of study and practice. Environmental concerns, such as overconsumption of resources, pollution, and habitat destruction, have prompted a shift toward eco-friendly practices within the tourism sector (Prideaux et al., 2021).

Concepts like ecotourism and responsible tourism emphasize minimizing negative impacts on ecosystems and promoting conservation efforts (Kc et al., 2022). Moreover, social sustainability is another dimension gaining prominence, focusing on the well-being of local communities and addressing issues such as cultural preservation, social inequality, and community engagement (Naheed & Shooshtarian, 2022; Hariram et al., 2023). For example, residents with negative perceived impacts of tourism may perceive their place as just an object to them, which unfortunately can be a dire consequence of over-tourism (Ramkissoon, 2023). As global tourism resumes to pre-pandemic levels (or exceeds them in some parts of the world), understanding the complicated (but necessary) relationships between tourism and sustainability remains essential for shaping a resilient tourism industry (Wided, 2022).

1.3. Sustainability among tourism (and hospitality) students

In previous decades, it was thought that the key to tourism and hospitality education lies in its coherence with other sectors (Fuchs et al., 2024). This argument aligns with the primary mission of higher education, which seeks knowledge about the principles governing various aspects of the world (Kopnina, 2020; Timm & Barth, 2021). Tourism education is meant to explore shifts in thinking, advance theoretical understanding, reframe fundamental questions, and have a broad impact with enduring value (Handler & Tan, 2022). The significance of sustainability in tourism and hospitality education is obvious, thus, making it an important topic to address within any business curriculum (Deale & Barber, 2012; Handler & Tan, 2022). Earlier studies showed that the fields encompassed in a hospitality and tourism program play a crucial role in shaping the curriculum (Leal Filho et al., 2018). While tourism students recognize the importance of sustainable tourism,

their understanding of sustainability principles and the technical aspects of its implementation remains limited (Camargo & Gretzel, 2017). Notably, environmental management stands out as a key indicator (Edelheim, 2020; Swaim et al., 2014).

Nevertheless, there is a noticeable disparity as sustainability garners more focus in hospitality and tourism education research projects or publications at the epistemic level compared to its emphasis on actual teaching (Edelheim, 2020; Timm & Barth, 2021). Moreover, challenges exist in successfully integrating sustainability into business education to reach diverse student mind-sets (Swaim et al., 2014). Therefore, when tackling environmental sustainability issues, it is important to consider both practical applications and academic frameworks (Leal Filho et al., 2018). Subsequently, embedding sustainability in tourism education is crucial for fostering a new generation of professionals who are aware, responsible, and equipped to address the challenges posed by the dynamic tourism industry (Streimikiene et al., 2021). Many students associate sustainability primarily with reducing plastic waste, conserving energy, or minimizing pollution, rather than recognizing its interdisciplinary nature, which includes ethical business practices, cultural preservation, and long-term economic viability (A. Guerra & Smink, 2019). Moreover, students frequently report that sustainability topics feel abstract or theoretical in their coursework, with limited real-world applicability (A. Guerra & Smink, 2019).

Camargo and Gretzel (2017) found that tourism students in Latin America expressed frustration over the lack of hands-on learning experiences that would allow them to translate sustainability principles into practice. Similarly, studies indicate that students perceive sustainability education as fragmented, often appearing as isolated topics within courses rather than a cohesive and integrated framework throughout their studies (McGrath et al., 2020). In contrast to students, one of the main barriers for educators are curriculum constraints. Higher education institutions often have rigid course structures, making it difficult for faculty members to introduce interdisciplinary and experiential learning approaches that would help students grasp sustainability in a practical context (Leal Filho et al., 2018). Timm and Barth (2021) suggest that not all educators receive adequate training in sustainability pedagogy, resulting in inconsistencies in how sustainability concepts are taught. As tourism continues to play a significant role in global economies, it is essential to ensure that its growth is sustainable and benefits both the environment and the communities involved (Streimikiene et al., 2021).

Subsequently, the study was guided by the following research question: "How does the concept of 'sustainability' manifest in the curriculum of a tourism education program in Thailand?"

2. Methodology

2.1. Research design

An exploratory research design was utilized to empirically investigate the stakeholder perceptions regarding the inclusion of sustainability topics in the curriculum. This research approach was appropriate for research questions that have not previously been studied in-depth (Jain, 2021). The research was undertaken from the perspective of internal- and external stakeholders who share their experiences and perceptions about including sustainability in tourism education. It should be noted that the participants

were not given a formal definition for “sustainability” because their interpretation of the term was considered another contribution for this exploratory study. Subsequently, two studies were undertaken, wherein the first study attempted to achieve the first research objective, while the second study aimed to achieve the second research objective.

2.1.2. Study 1: Data collection and sampling

The participants were purposively selected by the lead researcher and asked for their voluntary participation in the study. Selection criteria included: gender, ethnicity, academic major, and English language proficiency. Although the results are not generalizable outside the context of the study, purposive sampling aimed to replicate a fair representation of the demographics at the sampling site. The study was conducted at the Faculty of Hospitality and Tourism, Prince of Songkla University in Phuket, Thailand. The faculty is located in one of the world’s most-renowned tourist destinations (Chaiyasain, 2020) and has been producing tourism graduates since 1994. Currently, the institution is placed by the QS World University Rankings as the highest-ranked tourism, leisure and hospitality program in Thailand, which made it an ideal sampling location. The Bachelor of Business Administration (B.B.A.) in Tourism Management or Hospitality Management spans a period of four years. While specific information on the extent to which each subject incorporates sustainability was beyond the scope of the research, all subjects are expected to align their learning outcomes with the 17 Sustainable Development Goals (SDGs).

In addition, the faculty offers an international curriculum taught exclusively in English, with 75% Thai students and 25% international students from countries such as China, Germany, and Japan. Consequently, English language proficiency was an important factor in ensuring meaningful and in-depth discussions. During the recruitment process, all students and educators were informed that participation in the study was entirely voluntary, their responses would remain confidential, and their involvement would not impact their grades or evaluations. All interviews were conducted one-on-one in English to maintain consistency with the language of instruction and facilitate clear communication. In this phase, a total of 28 students confirmed their willingness to participate in the research. Moreover, the interviews occurred face-to-face at a nearby off-campus venue. The interviews were conducted by an experienced investigator and supported by a research assistant. The semi-structured interviews were guided by a seven-item interview guide (Table 1) with relevant probing questions for each item.

In particular, the in-depth interview guide asked participants to reflect on how they perceived the inclusion of sustainability topics in their curriculum and assess their level of awareness about sustainable practices. The average length for the interviews was 32 minutes and the sociodemographic characteristics of the participants are summarized in Table 2.

2.1.3. Study 2: Data collection and sampling

While the stakeholder groups and inclusion criteria differed across studies, both studies considered demographic variation (e.g., gender and ethnicity) in the purposive sampling process. For Study 2, additional selection criteria included academic rank and years of service. A total of 12 academic staff from the Faculty of Hospitality and Tourism, Prince of Songkla University agreed to participate in the

Table 1. A copy of the interview guide that directed the discussions with the students.

Interview guide	
No. 1	How would you describe your understanding of sustainability within the context of tourism, based on your current curriculum?
No. 2	In your opinion, why is it important for sustainability topics to be included in your tourism studies?
No. 3	Can you share any specific examples of sustainable practices within the tourism industry that you have come across during your studies?
No. 4	Are there parts about sustainability and tourism that you think your current coursework does not cover well?
No. 5	What difficulties do you think exist in adding sustainability to tourism practices, considering your education so far?
No. 6	Can you identify any role models or initiatives within the field of sustainable tourism that have inspired or influenced your perspectives?
No. 7	In your view, what steps could educational institutions take to enhance students' awareness and understanding of sustainable practices?

Table 2. Sociodemographic characteristics of the 28 participants from the first study.

Characteristic		Frequency	Percentage
Gender	Male	7	25%
	Female	21	75%
Ethnicity	Thai	23	82%
	Foreign	5	18%
Academic major	Tourism Management	15	54%
	Hospitality Management	13	46%
Years of study	Year 1 or 2	10	36%
	Year 3 or 4	18	64%

study. Furthermore, the interviews took place face-to-face on-campus or at a nearby public venue. Similar to the first study, the interviews were conducted by an experienced investigator and supported by a research assistant. The semi-structured interviews were guided by a six-item interview guide (Table 3) with relevant probing questions for each item. In particular, the in-depth interview guide asked participants to reflect on how they promote sustainability in their coursework and assess the effectiveness of current teaching methods in conveying sustainable concepts. The average length for the interviews was 42 minutes and to protect the identity of the participants, only limited sociodemographic characteristics are reported in Table 4.

Table 3. A copy of the interview guide that directed the discussions with the academic staff.

Interview guide	
No. 1	How do you perceive the role of educators in promoting sustainability within the academic curriculum?
No. 2	Can you share specific teaching methods you employ to integrate sustainability concepts into your courses?
No. 3	From your perspective, what challenges, if any, do educators encounter when trying to incorporate sustainability into their teaching?
No. 4	How effective do you believe the current teaching methods are in conveying sustainable concepts to students?
No. 5	In your experience, how engaged are students with sustainability topics, and are there particular methods that seem to resonate more effectively with them?
No. 6	What is your opinion about the themes (limited practical understanding, lack of role models, and cultural variability) that emerged from the discussion with the students?

Table 4. Sociodemographic characteristics of the 12 participants from the second study.

Characteristic		Frequency	Percentage
<i>Gender</i>	Male	5	42%
	Female	7	58%
<i>Ethnicity</i>	Thai	6	50%
	Foreign	6	50%
<i>Academic rank</i>	(Assistant) Lecturer	8	67%
	(Assistant) Professor	4	33%
<i>Years of service</i>	Less than 5 years	6	50%
	More than 5 years	6	50%

2.2. Data saturation and analysis

Sampling was concluded based on the concept of data saturation, in which “the ability to obtain new information has been attained” and generating additional themes is no longer feasible (Fusch & Ness, 2015, p. 1408). The audio-recorded interviews were transcribed verbatim and the transcripts were shared with the participants for their approval (as well as allowing them to supplement information if necessary). Next, personal identifiers were removed, and the content was organized by question and color-coded based on similar themed keywords. The researchers opted to carry out these processes manually, foregoing the use of software, as this allowed them to engage more deeply with the content. An inductive coding approach was applied, allowing themes to emerge directly from the data without imposing preexisting theoretical frameworks (Naeem et al., 2023). Drawing on good practice, the retrieved codes provided a foundation for further bundling and arranging the keywords into clusters on which basis the final themes emerged, and conclusions were drawn (Braun & Clarke, 2019).

2.3. Confidentiality and ethics

Approval to undertake the study was obtained from the university’s internal research committee through the corresponding author under approval number FSI6704155S0. Moreover, written consent was collected from every participant prior to commencing the interview.

3. Results

3.1. Study 1: themed findings

The thematic analysis of the transcribed interviews revealed a range of interrelated themes reflecting students’ perceptions of how sustainability is embedded within their tourism education. These themes encompassed both perceived challenges to active engagement and factors that shape or support learning, including suggestions for improvement. Prominent perceived barriers included: (1) limited practical understanding and (2) lack of role models. In addition, (3) cultural variability emerged as an important contextual factor influencing how sustainability is interpreted and valued by students. The following findings contributed to achieving the first research objective (i.e., to

examine the perceptions of tourism students regarding the inclusion of sustainability topics in their curriculum and assess their level of awareness about sustainable practices).

3.1.1. Theme 1—limited practical understanding

When questioned about difficulties to implement sustainable practices, a common response among the involved students (approximately one-third of them) centered around their struggle to translate the concept of sustainability into practice. Consequently, the term “limited practical understanding” emerged as a key theme of the study. Although it cannot be said that the tourism students demonstrated a lack of awareness about the significance of studying sustainability, a considerable number acknowledged comprehending the concept theoretically but were *“not sure of what is actually expected of them”* (Participant #12). Similarly, other participants echoed this response and the following quotes were indicative of a shared sentiment among the students.

Sometimes, I feel like I am not sure what is expected of me when the teacher talks about sustainability (Participant #18)

I always think about protecting nature and not using plastic, but the teachers ask us to be more concerned about sustainability in other areas [...] but sometimes I am not sure how I can do it (Participant #3)

Actually, in many of my classes we talk about sustainability and how it affects the tourism businesses, but I mostly think about CSR when I hear about sustainability (Participant #15)

Fewer than five students offered explanations, stating that sustainability, despite being a popular theme in their studies, is perceived as complex. One student highlighted that *“everyone talks about saving the environment, but sometimes I don’t understand the other terms [of sustainability], and I don’t feel confident enough to ask”* (Participant #7).

3.1.2. Theme 2—lack of role models

Another key theme that emerged from the discussion was a lack of role models. Interviewees (approximately half of them) noted a shortage of role models within their institution and a desire for more practical examples from the industry. More specifically, the students were looking for good practices that demonstrate successful integration of sustainability in tourism either by their course instructor or through case studies in the tourism industry as illustrated and reflected in the following comments.

I wish we had more people at the university who actively use sustainable practices in tourism. It would be inspiring for me to see our teachers leading by example (Participant #21)

For me, it is challenging to imagine how to apply sustainability without real examples. More case studies (from Phuket) or examples from our professors could provide the help we need (Participant #6)

Contrary to the previous comments, a few of the interviewed students (less than one-quarter) added that they appreciate the theoretical knowledge provided in their courses regarding sustainability in tourism. The same cohort of students acknowledged the efforts of instructors in conveying the importance of sustainable practices, even if the practical application is perceived as lacking.

3.1.3. Theme 3—cultural variability

A third theme, cultural variability, emerged from the discussion with about one-third of the participants. The theme refers to the differing levels of awareness (concerning sustainability) and – in part – a perceived irrelevance as attested by some of the participants (four of them). Specifically, the perception of sustainability appeared to differ based on nationality or ethnical background. The majority of Thai students had a moderately positive awareness and attitude toward sustainability, e.g., *“I think it is an important topic and we should do more”* (Participant #4). However, the sentiment amongst the international students differed substantially. Generally, the Thai students would agree to the importance of supporting sustainable practices (although lacking practical understanding), while the international students’ sentiment would center around skepticism if their actions would make any difference after all. The following comments highlight the sentiment.

It is not easy for me to become more sustainable because there are fewer options here to support this behavior for me (Participant #22)

To be honest, I am doing already more than many people that I see at the dormitory or on the street (Participant #13)

From the discussion with the students, it became apparent that cultivating a sense of global citizenship within the student community is vital. This should expand beyond acknowledging cultural diversity but also fostering a shared responsibility for sustainable practices.

3.2. Study 2: themed findings

The central themes emerged from the discussion with the academic staff in response to discussing the findings from the previous study with the students. The thematic analysis with the educators revealed two key themes: (1) co-creation, and (2) collective staff training. The following findings contributed to achieving the second research objective (i.e., to examine the role of educators in promoting sustainability and assess their perception of the effectiveness of current teaching methods in conveying sustainable concepts).

3.2.1. Theme 1—co-creation

The theme of co-creation emerged during the discussion with the majority of the academic staff (eight out of twelve). To set this term into context, co-creation of teaching occurs when staff and students work collaboratively with one another to create components of curricula or pedagogical approaches (Bovill, 2020). Educators demonstrated an understanding of the barriers and challenges encountered by the students and suggested a collaborative approach when revising the curriculum or developing course content for their subjects. Most participants supported the idea of involving the students in the process and were welcoming a collaborative approach as this has the potential to not only improve embedding sustainability into the curriculum but also allow students to demonstrate and improve critical soft skills (such as problem-solving, critical- thinking, or decision-making). Illustrative for this sentiment are the following comments from Participants #4 and #8.

It is a great idea to actively involve the students in the creation process of the curriculum as well as on a course level (Participant #4)

After the students have taken a particular course, involve them during the summer break with a focus group discussion to improve the curriculum or course and give them extra activity hours for their participation (Participant #8)

Some of the participants highlighted specific ways to involve students in the co-creation process. For example, involving them in focus group discussions during the summer break could be an opportunity to utilize the months in which no lectures occur with development work.

3.2.2. Theme 2—collective staff training

The second major theme resulting from the interviews with the educators was collective staff training. While acknowledging the expertise of the academic staff within their respective fields (as mentioned by fewer than six participants), there was a consensus that a holistic, high-level perspective sometimes prevents them from accurately estimating an appropriate level of for integrating sustainability topics into their coursework. The following comments exemplify the sentiments expressed by the participants.

Why not ask the responsible lecturer to create an appendix for the course syllabus in which the learning activities align with specific Sustainable Development Goals (Participant #7)

I think every teacher is an expert in their field, but we need more direction from the management about how much sustainability to include in each course (Participant #11)

Maybe Jonny does this and Susie does that, but do we know how much [of sustainability topics] we include at a high level? (Participant #3)

Essentially, the academic staff expressed a lack of clarity and vision regarding the extent to which sustainability should be integrated into their coursework. The challenge lies in determining how much sustainability would be considered sufficient. While acknowledging the variability of sustainability across different subject areas, participants emphasized the necessity of a holistic institutional approach. This approach would help identify the contribution of each course to the overall curriculum in terms of sustainability topics.

4. Discussion and implications

The research aimed to empirically investigate how the concept of “sustainability” is embedded in the curriculum of a tourism education program in Thailand. While a decade ago, sustainability was rarely taught within the curriculum of tourism education (Boley, 2011), nowadays it is rooted in the curriculum as an essential element. When examining the participants perception, this study revealed that several barriers and challenges remain unsolved for a more integrated approach toward education for sustainability. More specifically, the themes of limited practical understanding and lack of role models show that fundamentally addressing these issues is essential for fostering a deeper and more meaningful connection between students and the concept of sustainability. Implementing targeted educational interventions, promoting diverse role models (or practices), and incorporating culturally relevant perspectives (referring to the third

theme of the first study; “cultural variability”) into sustainability education can contribute to overcoming these barriers (Kopnina, 2020).

A possible avenue to overcome some of the previously discussed barriers and challenges could be through the co-creation of the curriculum. Co-creation in higher education is an emerging concept wherein “*meaningful collaboration between students and staff [...] allows students to become more active participants in the process*” (Nasri et al., 2023, p. 1073). While it is reported that students starting to show interest in adopting active and participatory roles allowing them to interact and work collaboratively with educators (Dollinger et al., 2018), it remains unclear why not more institutions opt for this approach as it has the potential to overcome some of the barriers and challenges derived from this study. In particular, the adaptation of co-creation has become more common in the context of improving tourism experiences (Campos et al., 2018) and specifically as a catalyst toward sustainable tourism (R. J. D. C. Guerra & Gonçalves, 2023).

Furthermore, the findings from the studies align with existing research on limited practical understanding (Camargo & Gretzel, 2017; Fuchs, 2023; Kagawa, 2007), lack of role models (Hudima & Malolitneva, 2020; Kenneth Jones & Hite, 2020), and cultural variability (Tomasini et al., 2020). Notably, the paradoxical combination of high asserted awareness, particularly among both students and academic staff, coupled with a limited practical understanding among students, raises intriguing questions. One potential explanation could be the influence of tourism lecturers with a strong sustainability perspective who may prioritize activism in their lectures (Boyle et al., 2015). This suggests the necessity for a more holistic approach to embedding sustainability, moving beyond relying solely on the “good intentions” of individuals. Moreover, the disconnect between awareness and practical understanding reveals the need for targeted interventions and a framework to bridge this gap in sustainability education.

4.1. Managerial implications

Limited practical understanding emerged as a prominent theme, with a substantial number of students expressing difficulty in translating theoretical knowledge about sustainability into practical application. Camargo and Gretzel (2017) argue that sustainability education demands an equal emphasis on both theoretical understanding and practical application. While acknowledging the importance of sustainability, the participating students of this study revealed uncertainty about the specific actions expected of them, indicating a gap between theoretical comprehension and practical implementation. As evident from the subsequent discussion with the academic staff, emphasizes the necessity for curriculum developers and educators to hone in a balance between academic understanding and practical application. To address the reported gap, universities should explore incorporating additional experiential learning opportunities, such as case studies, internships, and real-world projects, into their curriculum. These opportunities can give students the practical experience they need to effectively implement sustainability ideas within the tourism education industry.

Moreover, the identified lack of role models in current educational contexts indicates an important area for development, which aligns with the findings of Osman (2024). Educational institutions should prioritize hiring or training faculty members who are actively using sustainable methods in the field of tourism. Furthermore, guest lecturers,

industry collaborations, and alumni mentorship programs might be effective tools for inspiring students and showing them actual examples of sustainability in action. The theme of cultural variability indicates that a one-size-fits-all approach to sustainability education may be ineffective, as students' perceptions are shaped by their cultural backgrounds, values, and degrees of ecological knowledge. To address this, curricula should incorporate culturally appropriate examples and encourage cross-cultural debates on sustainability to enhance student engagement and critical thinking. Culturally responsive teaching, as proposed by Gay (2013), offers a practical framework for embedding sustainability in tourism education. This approach emphasizes the need for educators to acknowledge and respect ethnic diversity, and to integrate cultural contexts into teaching practices. Educators can achieve this by including culturally relevant examples, using diverse teaching materials, and encouraging discussions that highlight different viewpoints (Aronson & Laughter, 2016). Such methods ensure that curriculum resonates with and benefits diverse student populations.

As aforementioned, involving students in curriculum co-creation and providing collective staff training are effective strategies for delivering sustainability knowledge in tourism education. Educational institutions must value the voices of both internal stakeholders (academic staff) and external stakeholders (students). Although co-creation is rarely adopted in hospitality and tourism education, Galpin et al. (2022) emphasize the importance of empowering students in the early stage. A practical starting point could be small workshops involving a limited number of staff and students from diverse cultural backgrounds, ensuring participants understand their contributions are valuable and confidential. Given the relatively recent emergence of sustainability in tourism education, interdisciplinary teamwork and effective communication among academic staff are vital. Additionally, training with external stakeholders, such as industry experts, and collaboration with other tourism management faculty can enhance program relevance by aligning curricula with industry demands and fostering robust stakeholder engagement (Griffin, 2020).

4.2. Theoretical implications

The study's contribution to the theory is twofold. First, the results of the study reveal various themes that can be studied as valuable factors in future research. Five key themes surfaced, categorized into barriers – limited practical understanding and lack of role models – and strategic interventions to address them – co-creation and collective staff training in a and culturally appropriate context. These themes should be considered as critical contributors to the current theory in the context of hospitality and tourism education that impact student perceptions of sustainability during their studies. Secondly, the findings from both studies contribute to the discourse on sustainability education, highlighting that while sustainability is increasingly acknowledged in tourism higher education, it is not consistently integrated meaningfully into the coursework.

Co-creation of curriculum appears to be a potential strategy for addressing these limitations. By including students in course preparation and revision, educational institutions may guarantee that course content is relevant and interesting, thus boosting student buy-in and enhancing learning results. This method is consistent with constructivist educational ideas (Sørensen et al., 2023), which emphasize the active participation of students in constructing their educational experiences. Constructivist learning theory

highlights the importance of learner-centered approaches and the active engagement of students in knowledge creation (Pande & Bharathi, 2020). Encouraging students to assess and contribute to curriculum design fosters deeper learning by making the process interactive and reflective.

In addition, this study underscores the importance of comprehensive staff training and a systematic approach to curriculum development. This aligns with research on cognitive development, which highlights the role of logical thinking and reasoning in learning. By equipping educators with a thorough understanding of sustainability principles and practices, staff training can foster a rational approach to teaching. Moreover, a comprehensive curriculum that integrates sustainability across multiple courses can enhance students' understanding of the interconnectedness of sustainability issues, promoting a more coherent and evidence-based learning experience.

5. Conclusion and future research

These findings resonate with previous calls for deeper engagement with students' lived experiences in sustainability education (Edelheim, 2020) and echo concerns about the disconnect between curriculum content and its practical implementation (Camargo & Gretzel, 2017). This study thoroughly examines the inclusion of sustainability into tourism education, emphasizing on the imbalances between academic understanding and implementation in practice. The research findings highlight the critical need to close these areas of weakness in order to better equip students with the skills and knowledge required for addressing the constantly evolving requirements of sustainable tourism. The study points out many main impediments, particularly students' lack of practical knowledge, an inadequate number of sustainability role models in learning environments, and the diversity of different cultural viewpoints on environmentally friendly practices.

These challenges, taken together, restrict the successful implementation of sustainability principles into tourism curriculum. The importance of this paper derives from its extensive inquiry into the challenges involved and the ways it recommends to address them. By highlighting the intertwined roles of educators and students in curriculum development, this study offers a stakeholder-driven approach that addresses both institutional barriers and pedagogical gaps identified in the literature (Edelheim, 2020; Timm & Barth, 2021). Moreover, by arguing for curriculum co-creation, the research emphasizes the necessity of including students in the learning process, which ensures that the information is both relevant and interesting. This strategy not only improves the educational results, but it also builds a stronger link between students and the sustainability concepts. Furthermore, the study emphasizes the need of collaborative faculty development in order to ensure educators are systematically prepared to teach sustainability successfully. Finally, the promotion of co-creation aligns with constructivist approaches to learning, which emphasize the active role of students in shaping their educational journey (Pande & Bharathi, 2020).

This institutionalized strategy for sustainability education will be critical for creating a unified environment for learning that emphasizes sustainability at all levels of the curriculum. The wider significance of this study goes beyond the regional setting of tourism curriculum. As the travel and tourism sector struggles with various challenges of sustainability, the demand for professionals who recognize sustainable practices grows. The current study adds to the continuing discussion about sustainability in higher education

by not only outlining the present weaknesses in tourism curriculum but also by proposing practical approaches to overcome these challenges. The importance placed on co-creation and collaborative educational training could be used as a blueprint by other colleges and universities looking to improve their sustainability initiatives.

Establishing upon the findings of the present study, future studies should focus on determining the long-term implications of these recommendations for curriculum modifications, especially how they affect students' knowledge about sustainability and preparedness for implementing sustainable practices in their careers as professionals. Long-term research would potentially provide useful information on how such educational approaches influence students over the course of time, allowing for a more contextual comprehension of their effectiveness over time. Furthermore, comparative study in other cultural and geographical settings might prove useful in establishing the generality of these findings. Recognising how cultural influences affect the acceptance and execution of education about sustainability can help educators personalize their tactics to varied student demographics.

Furthermore, studying the impact of online resources and technological innovations on improving sustainability education is an interesting area for further study. As the educational environment evolves toward digital and hybrid instructional models, knowing how these platforms may be used to promote sustainability teaching is critical. Incorporating digital resources into the curriculum may give students greater interest and practical educational experiences, therefore closing the gap between theory and practice. Future research could also benefit from interdisciplinary approaches, combining insights from fields such as environmental science, education technology, and tourism studies to develop innovative sustainability education strategies.

Hence, future studies may expand on the framework set by this study by further investigating these areas, resulting in the creation of more successful and meaningful sustainability education programs in tourism and beyond. This study presented a strong foundation for assessing the present status of sustainability in tourism education and proposed actionable ideas for improvements. By resolving the deficiencies found in the present study and adopting the indicated future research areas, educational institutions may greatly improve their graduates' sustainability competences, therefore helping to create a more environmentally conscious tourism industry.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was financially supported by the Faculty of Hospitality and Tourism Research Fund, Prince of Songkla University.

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Author contribution statement

KF acquired funding for the research. KF and RK jointly conceptualized the study. KF and RK prepared the initial draft of the article, while DS conducted the data collection, analysis. KF and RK prepared the first draft of the article, while DS contributed to refining the final version of the manuscript. All authors approved it for publication.

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