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Teaching and Learning Methods for Promoting Sustainability in Tourism Education

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Abstract: Teaching and learning methods play an important role in promoting sustainability in tourism education. However, previous studies mainly focus on sustainability in tourism. This qualitative survey provides an overview of how sustainable development and tourism education are taught and learned in higher education institutions. It aims to support the selection of teaching and learning approaches and methods for educating sustainability-driven tourism at universities. The materials were selected based on keywords in tourism education. The study describes 32 articles published in peer-reviewed scientific journals from 2000 to 2022. The content of the articles was analyzed in detail using qualitative content analysis. Collaborative and interdisciplinary learning and case study teaching, alongside problem-based learning and experiential learning (outdoor learning), were utilized in 10 and 6 articles, respectively. Developing collaborative and interdisciplinary learning skills, developing systems thinking skills, developing experiential learning skills, and developing techniques for increasing environmental awareness were the key points of teaching and learning methods to promote sustainability in tourism education. Behavioral Change Wheel (BCW) in tourism should be implemented in school education to reach sustainable development goals and to support sustainable development.

Keywords: tourism education; higher education; sustainability education; environmental awareness; sustainable development; literature review; content analysis

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1. Introduction

Education plays a central role in shaping the transformation of individuals and societies towards sustainability. Education for sustainable development is an educational vision to balance human and economic well-being with cultural traditions and reverence for the Earth's natural resources [1]. It applies the results of sustainability science to educational practices, guiding the choices of learning objectives, teaching content, and teaching and learning methods [2]. Sustainability science is a new and independent scientific discipline attempting to incorporate scientific research into physically, socially, and morally complex domains with unique problem-solving agenda [3].

Competencies for sustainability have become a focal topic of sustainability education (SE) research. Originally, key competencies involved systems thinking competency, anticipatory competency, normative competency, strategic competency, and interpersonal competency [4], whereas later, interpersonal competency was renamed collaboration competency, and three more competencies including critical thinking competency, self-awareness competency, and integrated problem-solving competency were added to the list [5]. SE, characterized by a holistic approach and a pluralistic approach concerning teaching content, can help develop these competencies [6]. The challenge for SE programs lies in how to instill in students the strong motivation necessary to make the world more sustainable. The relationship between teaching and learning is reviewed theoretically within the social

context [7]. However, given that mindfulness can impact understanding and facilitate individual and societal sustainability, it should be considered as a key element in sustainability research, practice, and teaching [8].

Among the 17 sustainable development goals (SDGs) in the United Nations' Agenda 2030 for sustainable development [9], eight address social dimensions. The Global Goals for Sustainable Development in 2015 are to end poverty, protect the planet, and ensure prosperity for all. There are also interrelationships between these ones and environmental, economic, and process dimensions. However, despite the emphasis of the United Nations' Agenda 2030 for sustainable development on social aspects, it is usually inevitably neglected [10]. It is widely recognized that there is an increasing awareness of the importance of environmental protection, and a critical need for tourism and hospitality education on sustainability. Sustainability has provided a new perspective to make policies and to manage and plan tourism. In mainstream sustainability discussions, much attention has been paid to the ideas of the UN about sustainable development entitled 'sustainable tourism', which combines tourism with sustainability.

Ever since sustainability is linked to tourism, systematic attention has been paid to sustainability in tourism. The Building Excellence in Sustainable Tourism (BEST) Education Network and the Tourism Education Futures Initiative include tourism and Education for Sustainability (EfS). According to Wade (2008), EfS contains both a process towards sustainability and a vision of sustainability [11], and also the agency of human being [12]. In 2011, an overview of EfS linked sustainability to tourism, reporting the outcomes of the BEST Education Network Think Tank and providing a theoretical basis for understanding EfS in Tourism [13]. The researchers also described the Building Excellence in Sustainable Tourism Education Network (BESTEN) group and explored the evolution of education and research to support practical changes relating to tourism and sustainability within 15 years of development [14]. It is a widespread agreement that education has an important role to play in the achievement of sustainable tourism [15]. While the United Nations Decade of Education for Sustainable Development (UNDESD) 2005–2014 is already behind, it is now timely to reflect on how universities have engaged with sustainability. Although many Sustainable Development (SD) initiatives and an increasing number of universities are involved in SD, most higher education institutions (HEIs) still conform to tradition [16]. In the field of tourism, although sustainability has been studied for nearly four decades, there is increasing concern over the social, cultural, and environmental impacts of tourism [17]. The term sustainable tourism education (STE) can be seen in curriculum and teaching as a consideration of environmental protection and participation of the local population [18]. STE provided by higher education institutions at the undergraduate level is significant in training managers and meeting the demand for qualified labor in the tourism sector in terms of sustainable tourism [19].

The concepts SE and EfS are often used as synonyms [20]. In this study, we use the concept of SE in order to draw attention to the role of teaching and learning methods in supporting sustainable development thinking in STE. Research has shown that, although studies on sustainable development education (SDE) and tourism education (TE) have been published in sufficient quantity, there are very few studies on teaching and learning methods for supporting sustainable development thinking in STE. This study fills this gap. This qualitative survey gives a broad overview of how sustainability and tourism education are taught and learned in higher education. It aims to support the selection of teaching and learning approaches and methods in sustainability-driven tourism education at universities.

RQ1: What are the teaching and learning methods used in TE for promoting sustainability in higher education?

RQ2: What are the key points of the teaching and learning methods in TE for promoting sustainability in higher education?

RQ3: Which kinds of knowledge levels and cognitive skill levels are used for supporting learning sustainability-driven tourism in higher education?

The results can also be used to develop tourism curricula and facilitate teaching in high education.

2. Theoretical Framework

2.1. Tourism Curriculum and Sustainability Education

Sustainability is a recurring theme in tourism literature and economics. As a result, there is growing recognition of the need to include SE in the curriculum for business and tourism students. However, there are very few studies on how "sustainability" is embedded within TE curricula.

One study on the business/tourism curriculum at an Australian university using interpretive methodology indicated three key problems: (1) a crowded curriculum; (2) staff and student resistance to sustainability; and (3) the realities of a complex, multicampus institution [21]. The environmental attitudes of a business and tourism program were explored using the New Environmental Paradigm Scale [22]. Meanwhile, the need to teach sustainability and how to implement teaching sustainability across the hospitality and tourism curriculum were examined [23]. The results indicated various approaches for teaching sustainability: providing more optional courses on sustainability; allocating sustainability to certain majors; and giving academic autonym to professors incorporating sustainability into hospitality and tourism curriculum, etc.

As tourists are an important stakeholder group, this must be taken into account when discussing the EfS in tourism [13,20]. Guiding tourists involving the management of tourist destination and taking tourist experiences as a chance for EfS should be discussed. Tourism might be a chance to promote global sustainability issues and to educate tourists while traveling in the future, and in their daily lives back home. Furthermore, outdoor recreation can be used for critical reflection on neo-liberalism and education about sustainable systems in higher education curricula [24].

2.2. Teaching and Learning Principles and Methods for Promoting Sustainability in Tourism Education

The concept of EfS is based on a transformative approach to teaching and learning that emphasizes critical reflection on values and actively empowers learners to affect change [25]. Much critical pedagogy teaching emphasizes that EfS helps students question their values and beliefs. Boyle et al. critically analyzed the relationship between tourism lecturers' understanding of sustainability and how sustainability is taught and developed in curricula. The results showed an obvious ideological difference in the way educators positioned and taught sustainable tourism, ranging from a "weaker" economic focus to a "stronger" sociocultural/ecological focus. It was also evident that tourism educators who had a strong sustainability perspective were inclined to participate in the reform principles of political agency, critical reflection, and activist reform in tourism higher education.

The teaching and learning strategies for sustainability in an undergraduate tourism module were described, and the concept of sustainability was studied as a threshold concept for TE. Thus, sustainability is irreversible, transformative, and integrative. It indicated that the past two decades have seen a promotion in education for sustainability in tourism curriculum [26]. Some researchers have examined learning systems serving as a useful tool to identify opportunities for improving SE planning in tourism. By combining more concepts from learning theory and a curriculum revision process, they have produced a conceptual framework for SE with new models [27].

Pedagogy and learning environment are of great importance. Regarding the learning environment, cases of mobbing have frequently occurred at educational institutions [28]. As the tourism sector is required to contribute to the UN's 2030 Sustainable Development Goals (SDGs), tourism lecturers need to cultivate industry leaders with "strong sustainability" mindsets. For a long time, "sustainable development" has long been regarded as a weaker form of sustainability because it emphasizes "pro-growth". Due in part to course designs that use weaker conceptualizations of sustainability and a dearth of holistic,

critical, and systemic thinking, tourism students graduate with limited understandings of sustainability [29]. Considering this, a framework is proposed to help tourism educators perform reflective thinking in connection with the SDGs to foster the development of more sophisticated methods of reasoning and behaving in order to achieve global sustainable tourism outcomes.

The first comprehensive national inventory of postgraduate tourism courses has been developed, and it identifies and analyzes sustainable components throughout the breadth of courses and modules offered [30]. To precisely evaluate creativity and predict the impacts of the learning environment, an educational co-competitive strategy, the creative problem-solving (CPS) model, and the abbreviated Torrance Tests of Creative Thinking were adapted. The outcomes demonstrated that co-competitive course design can foster students' sustainability-related critical thinking and boost student creativity, which should be pushed as a beneficial tool in SE going forward [31].

A sustainability-focused undergraduate tourism online module's efficacy was assessed using action research [32]. This informed the curriculum reform process and research methodology to improve "education about and for sustainability" in the tourism management curriculum. The course was very different from previous courses. The removal of the semester-ending final exam, the addition of a critical, reflective journaling exercise, the use of critical scorecards, and the addition of frequent industry guest lecturers were the modifications that were made, all of which specifically addressed sustainability principles and concerns for tourism enterprise management. The transformation process improved students' understanding of sustainability concepts in light of their potential professional prospects. The changed learning engagements allowed students to better strengthen their critical thinking skills [33].

The module was developed jointly with the leadership of BEST (Business Enterprises for Sustainable Tourism), providing a framework and a formative and summative review throughout the development process [34]. This module can serve as a template for others that are created to teach sustainable tourism principles across the curriculum in hospitality/tourism programs at higher education institutions. Some researchers focused on alternative teaching methodologies. Creative teaching methodologies place the student at the center of the learning process. The primary goal of the "Orion—promotion of the Vučedol culture" project is the promotion of heritage through cultural tourism [35].

Education for sustainable development (EfSD) is closely related to an active, participatory learning process because it encourages learners to ask critical questions, question and clarify values, envision a more positive future, think systematically, apply what they have learned, and explore the relationships between traditions and innovations [36]. Beyond conventional teacher-centred teaching and learning methods, tourism and hospitality educators have also been encouraged to implement various student-centred teaching and learning methods [37]. These kinds of methods are derived from the student-centered idea [38]. Problem-based learning is most successful if sufficient management support is given to maintain problem-based learning by training instructors and students in its educational principles and practices [39]. According to Chung et al. [40], a student-centered problem-based learning curriculum can solve the previous difficulties of students' problem-oriented learning and adapt the content and evaluations of the subject to the students' learning needs and potential. It can also increase students' learning motivation and improve their learning results.

Experiential learning theory is considered important by most educational tourism theorists because it explains the way of learning that can contribute to the achievement of desired income outcomes in tourism [41]. In a tourism design work [15], students worked in groups encouraged to consider local tourism development issues, both in general terms and with a particular focus on the local situations. The students made a case study with the teachers and prepared a report containing recommendations for balancing the usage of the economic, developmental, environmental, and cultural objectives over the next six years. To solve the problem of insufficient simulation of sustainable tourism teaching, a number

of researchers detailed the development, design, testing, and validation of a destination development game simulation meant to enhance the teaching and learning of sustainable tourism principles. The need of a consistent and comfortable atmosphere for using such a simulation as a teaching and learning aid was emphasized during the development process. Additional validation will be carried out in several institutions to test and track various simulation uptake methods.

2.3. Competencies and Skills for Sustainable Development in Tourism Education

According to La Lopa and Day [42], willingness to change behavior is variable in the tourism industry. This speaks of the need to develop educational strategies and methods regarding the acceptance and implementation of environmental and social strategies to achieve sustainable development. Key competencies to be developed in TE in this sense are systems thinking; strategic thinking; anticipation; critical thinking; collaboration; self-awareness and integrated problem solving [42].

Systems thinking competency is needed to understand the underlying system structures and feedback mechanisms that affect the long-term functioning of tourism [43]. Anticipation competency has become increasingly significant when discussing the skills and qualifications needed to meet market demand and informing young people about the occupations and their potential in the job market [44]. Strategic thinking competency is important, e.g., in terms of managing the changes in the tourism and restaurant industry [45]. Critical thinking competency is valued as a dynamic business skill [46]. Collaboration competency is important, e.g., because learning is a social process of meaning-making concerning interpersonal relationships [47]. Self-awareness competency is important when serving the tourism industry's evolving needs especially in environment, which is characterized by volatility, uncertainty, complexity, and ambiguity [48]. Integrated problem-solving competency is important, e.g., to maximize collective goals [49].

The realization of sustainable development in society requires continuous updating of sustainable development skills in order to maintain and develop professional skills, as well as nurturing a change-promoting educational culture, both in education in general but also in TE. However, there is no integrated approach to education so far. Carlisle (2021) [50] stresses that sustainability skills are interdisciplinary. In addition, the Intergovernmental Panel on Climate Change (IPCC) [51] and the new European Commission Pact for Skills Strategy [52] emphasize the current and future importance of sustainability skills in tourism. Green, or environmental, skills and social skills are considered key sustainable development skills that must be taken into account in TE cf. [50]. According to the Next Tourism Generation Alliance [53], green skills mean the following:

> Resource management to recycle and manage waste, water and energy services including principles of circular economy in the design and management of tourism value chains, sustainable design and management techniques of hotels and sustainable tour packages.

Green skills should support the application of Environmental Management Systems and the capacity to utilize waste, water, and strategies for effective energy management, such as using alternative technologies and recycling and composting [50]. Thus, when designing and managing the tourism value chain, it also implies implementing opportunities to facilitate and boost the circular economy.

Social skills mean the following [53]:

> Behavioural and practical attitudinal competences (soft skills) in interpersonal communication, accessible tourism knowledge, gender equality, cross-cultural understanding and delivering optimal customer service.

Researchers have considered the most important social skills to be "soft" skills [54–57]. Kiryakova-Dineva et al. [55] and Cinque [57] have stated that soft skills are also known and distinguished as transversal skills including emotional intelligence in addition to basic and/or life skills. Examples of soft skills are communication and personal skills [54,55].

They are important, for example, in customer service for taking into account the needs and preferences of customers of all ages [55]. Soft skills for employers and employees, according to the Next Tourism Generation Alliance [53], are defined as behavioral and practical attitudinal competences in interpersonal communication, gender equality, cross-cultural understanding, disability awareness, and customer service orientation. Managing interpersonal connections, working together, displaying a pleasant attitude, demonstrating respect, making appropriate eye contact as well as active listening are more examples of soft skills. Hakio and Mattelmäki [58] in their part emphasize the significance of self-awareness-based abilities to boost transformation and collaboration in sustainable design and to realize sustainable development goals.

2.4. Learning Topics and Interdisciplinary Skills for Sustainable Development in Tourism Education

To enhance students' comprehension of sustainability, a practical framework of reflexive management model of tourism supply chain was proposed by a case study in a local community [59]. It is constitutive of three phases: (1) program design in the upstream of tourism industry; (2) trip to a local community which lies in the downstream industry; and (3) reflexive raising and boosting sustainability awareness. Therefore, this practical framework can facilitate the development of critical thinking skills in students and increase their awareness of environmental issues. For students, it can also make learning about sustainability more engaging and allow them to gain personal understanding from cognition, experience, and reflexive contexts in higher education in Asia-Pacific countries [59] and also in other ones.

Neoliberalism can move higher education towards training by weakening students' ability of critical thinking skills needed to maintain the SDGs in future. Although teaching critical thinking, decision-making, and ethical stewardship still serves as the goal of higher education, a growing number of institutions are shifting their focus towards the market as a result of inadequate public support. An instrumental case study [57] revealed that sustainability pedagogy was losing out to consumer-focused policies and greater industrial participation in curricula. The participants also expressed concern over their capacity to improve the critical thinking abilities of the upcoming generation of tourism professionals.

The acquisition of industry-related skills is an important feature of undergraduate TE. For students, critical reflection is needed to be incorporated into their tourism research, especially on those issues which are related to sustainability [60]. Various types of intellectual thoughts can be integrated together, including equity, growth constraints, nature, poverty, and development, which can help sustainability education embrace key perspectives and attempts to transcend neoliberal and socialist positions. While researchers are not opposed to business-focused tourism instruction, they are interested in finding new ways to engage with tourism's many disciplinary underpinnings in order to give students the critical thinking and visionary abilities that are necessary for a rounded SE [60].

3. Materials and Methods

3.1. Data Collection

The focus of the present qualitative study was to clarify how sustainable development and TE were taught and learned in universities and higher education institutions. The materials consisted of articles on TE. They were selected according to the method reported by Àlvarez-Garcia et al. [61]. To conduct the systematic review, we used a consistent search strategy to identify international research in peer-reviewed journal articles, established the standards for selecting articles to be taken into consideration, and then examined the articles using specific and definite criteria [62].

The articles were searched using scientific databases, including Web of Science, Scopus, and Springer. All searches were conducted in English in June 2022, with the publication period from 2000 to 2022. The search approach was built on a methodical arrangement, classification, and choice of Boolean keywords associated to TE. Every scientific database

uses a hierarchical search strategy, ranging from the simplest combination of Boolean forms to more complex forms. In this qualitative survey with quantitative components, we initially identified 548 international academic papers that discussed TE, STE, tourist learning, or learning for sustainability in tourism. Of these, 56 articles were chosen for review based on the concepts of sustainable development mentioned in the titles and/or abstracts. However, in these chosen articles, only 32 met the following inclusion requirements and criteria and were used for the further analysis (see Figure 1). In order to analyze the training methods in more detail, we used the following requirements and criteria to select the training materials:

(a) Scope: National and international research;
(b) Type of research: Empirical research on teaching methods in TE;
(c) Period: 2000–June 2022;
(d) Target groups: Students in university tourism courses.

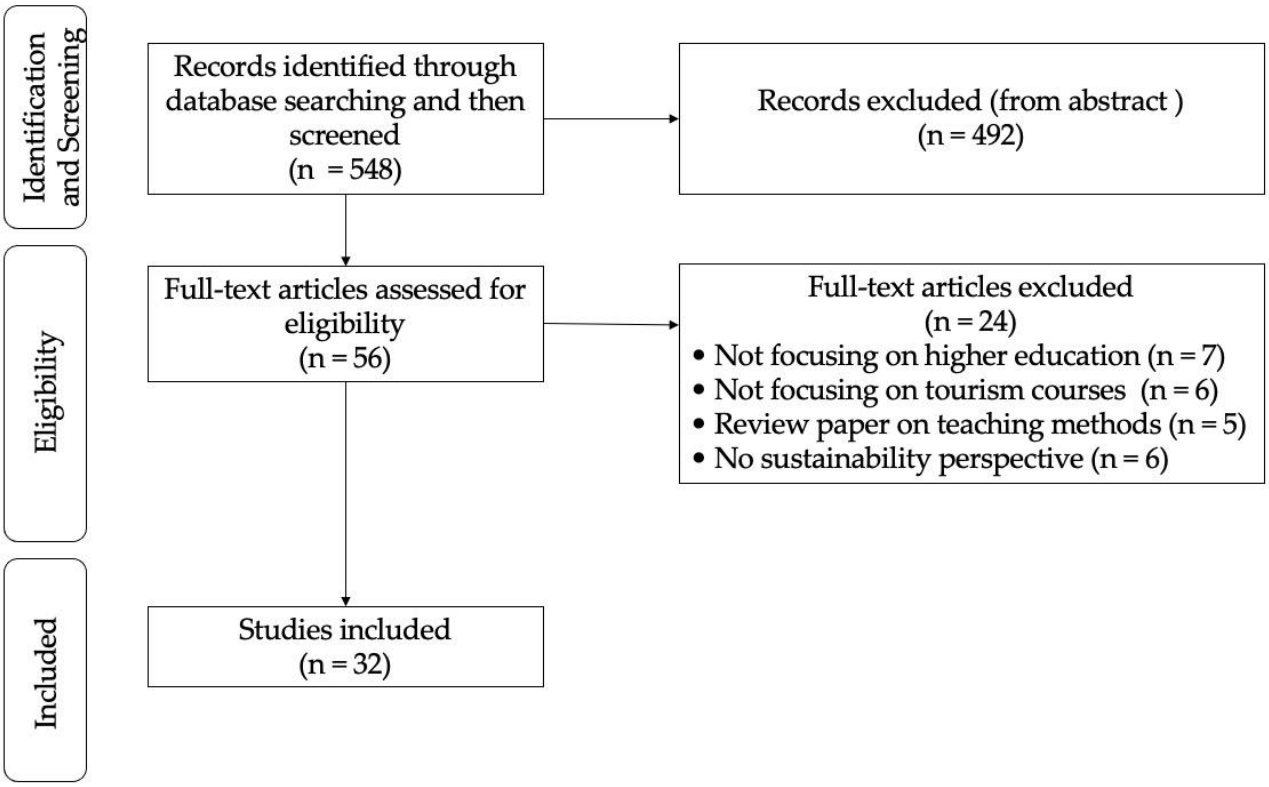

Figure 1. Flow chat of the study selection process.

The papers that were rejected lacked sustainable development components and had more general descriptions of extensive curricula or educational initiatives, rather than information on the actual teaching methods themselves.

3.2. Analyzing Methods

The study searched for which kinds of teaching and learning methods have been used in TE focusing on SE. This study is a qualitative survey about sustainable tourism education with quantitative features [63,64]. At first, we selected 18 journals concerning TE and SE. They included, in total, 35 articles that mentioned teaching methods. From these, we further selected and analyzed 32 articles in 17 journals in detail (Table 1).

The materials were analyzed using content analysis methods [81]. Inductive content analysis was used to analyze the teaching methods and the key points of the teaching methods [82]. Deductive content analysis was utilized to analyze knowledge and thinking skills used for supporting learning sustainability-driven tourism [83]. In the present study, these levels of knowledge form and constitute a hierarchical system. The dimension of knowledge configures a continuum in which knowledge changes when it goes upwards

from the concrete to the abstract, according to Bloom's revised taxonomy [83]. Correspondingly, more cognitively demanding knowledge would be reflected when classifying the thought processes. We can find that the level of factual knowledge is the lowest level, however, by nature, conceptual knowledge is more abstract. The third level is method knowledge which includes both factual and conceptual knowledge. At last, the highest level of knowledge, named as metacognitive knowledge, includes all the previous ones.

Table 1. The selected journals and the analyzed articles.

The Selected Journals	The Analyzed Articles
Journal of Teaching in Travel & Tourism	[22,25,27,33,65]
Sustainability	[19,28,66,67]
Journal of Sustainable Tourism	[29,30,68,69]
Journal of Hospitality, Leisure, Sport & Tourism Education	[18,31,70]
Journal of Hospitality & Tourism Education	[23,71,72]
Worldwide Hospitality and Tourism Themes	[73,74]
Tourism Recreation Research	[24]
International Journal of Hospitality & Tourism Systems	[75]
Baltic Journal of Economic Studies	[76]
International Journal of Technology and Educational Marketing	[59]
Tourism Management Perspectives	[77]
Journal of Hospitality and Tourism Management	[60]
The Business of Tourism	[35]
International Journal of Sustainability in Higher Education	[78]
Social Sciences & Humanities Open	[79]
Quality Assurance in Education	[47]
Tourism Management	[80]

Using this method, the possibility of misinterpreting texts and the inherent subjectivity of categorization could occur in qualitative content analysis [84]. These limitations could be solved to some extent by a model in which two researchers worked independently to choose the information units, categorize them, and then conduct the analysis in order to confirm the dependability of the procedure. The analysis procedure was naturally dialogical. The final conclusions were reached after discussions in which both researchers claimed that the article's content belonged in a particular category. The typical discussion was necessary and it embodied and reflected the interpretation of the teaching and learning methods, the key points of the teaching and learning methods, and the knowledge as well as thinking skills expressed in the articles. Until agreement and convincing arguments were discovered, the conversation went on. The choice of the data that were examined has an impact on how generalizable our findings are. We made the decision to read the entire article before classifying it in order to make sure that our classification choice was founded on a thorough grasp of the content. Additionally, depending on what the authors of the articles had explicitly written, our analysis was carried out and, therefore, our subjectivity in interpreting what we thought we could read as the authors' intentions exhorted less influence on the analysis.

As such decisions always include and contain elements of potential subjective interpretation, joint discussions about each selected article were necessary and essential in deciding and differentiating which aspects of the instructional issues the article emphasized. Using this procedure, we could ensure that the decisions depended on well-argued joint discussions, rather than on a single person's first impression of the articles. Because of the discussions and the dialogical nature of the analysis, calculations of inter-rater reliability were not necessary. As an essential part of the process, researcher triangulation was very important when carrying out the analysis. Our research group was constituted of experts in education and sustainability education. The third member was also an expert in educational sciences and an experienced teacher educator and researcher.

4. Results

4.1. Teaching and Learning Methods in Tourism Education for Promoting Sustainability

The authors' explicitly mentioned teaching methods for promoting sustainability in TE were coded and counted. In total, 18 different kinds of teaching methods were found in the analyzed articles (Table 2). Table 2 answers RQ1 which is mentioned in the introduction.

Table 2. Teaching and learning methods for promoting sustainability in TE (N = 32).

Teaching Methods	Article Number	Total
Collaborative and interdisciplinary learning	[23,27,30,33,59,60,67,75,76,78]	10
Case study teaching	[18,28,30,33,77,78]	6
Problem-based learning	[18,29,31,59,73]	5
Experiential learning (outdoor learning)	[24,25,65,75,78]	5
Practical teaching	[59,60,74,75,77]	5
Project work	[23,66,71,75,79]	5
Real-world learning	[47,59,60,80]	4
Reflective teaching/learning	[33,59,70]	3
Active learning/ constructivistic learning	[22,33,69]	3
Creative teaching	[31,35,72]	3
Interactive learning	[19,22]	2
Transformative education	[25,29]	2
Games	[68]	1
Learner-centred learning	[68]	1
Alternative teaching	[35]	1
Online learning	[69]	1
Group learning	[78]	1
Participatory ecological learning	[79]	1

Both teacher-centred and student-centred (learner-centred) methods were found. Mentions of teacher-centred teaching methods were rare, and they included teacher presentations (instructions and presentations) and discussions between teacher and students. The most common teaching method to promote sustainable development in TE was collaborative and interdisciplinary learning (n = 10). Collaborative and interdisciplinary learning fosters specialized knowledge and technical skills in environmental studies, and includes designing academic programs and group assignments [85]. It also plays an important role in cultivating autonomous learners [86], enhancing their creativity and collaboration through place-based education to promote an understanding of the local geographical features, environment, regional culture, economy, and traditional way of life [87]. The most frequently mentioned teaching methods were case study teaching (n = 6), problem-based learning (n = 5), experiential learning (outdoor learning) (n = 5), practical teaching (n = 5), project work (n = 5), and real-world learning (n = 4). The least used were games, student-centred learning, alternative teaching, online learning, group learning, and participatory ecological learning (n = 1 for each learning method).

4.2. The Key Points of Teaching and Learning Methods in TE for Promoting Sustainability

Table 3 answers RQ2 which is mentioned in the introduction. The findings showed that the key points of the teaching and learning methods in TE for promoting sustainability (Table 3) were related to various and multifaceted teaching and learning methods. The most emphasized key points were developing collaborative and interdisciplinary learning skills (n = 10) and systems thinking skills (n = 7). Collaborative and interdisciplinary skills are needed when solving problems and answering questions that cannot be satisfactorily solved with individual methods or approaches [88]. Systems thinking skills are important when analyzing how the component parts of a system relate to each other and how the system functions over time and within the context of larger systems [89]. Therefore, these skills can be used to enhance people's thinking about sustainability as a whole. Developing experiential learning skills (n = 5) was also seen as an important key point. With the help of experiential learning skills, knowledge is generated through the transformation

of experience [89]. Developing skills to promote active learning skills and developing problem-centred learning skills were the least mentioned (in both, n = 2).

Table 3. The key points of the teaching and learning methods for promoting sustainability in TE (N = 32).

Key Points of the Teaching and Learning Methods to Achieve the Goals of Sustainable Development in TE	Article Number	Total
Developing collaborative and interdisciplinary learning skills	[23,27,30,33,59,60,67,75,76,78]	10
Developing systems thinking skills	[25,27,29,35,60,73,77]	7
Developing experiential learning skills	[35,60,65,66,80]	5
Developing techniques for increasing environmental awareness	[72,79,80]	3
Developing scientific research skills	[29,74,77]	3
Developing active participation and interaction skills	[27,67,79]	3
Developing skills to take into account students' previous level of knowledge	[69–71]	3
Developing skills to promote active learning skills	[47,69]	2
Developing problem-centred learning skills	[28,77]	2

4.3. Knowledge Levels and Cognitive Skill Levels for Supporting Learning Sustainability-Driven Tourism

In exploring which kinds of knowledge levels and cognitive skill levels are used for supporting learning sustainability-driven tourism, Bloom's revised taxonomy [83] was used. According to what Krathwohl proposed [83], there are four kinds of knowledge: fact (factual) knowledge, conceptual (concept) knowledge, procedural (method) knowledge, and metacognitive knowledge. Factual knowledge means the essential elements (knowledge of terminology and knowledge of specific details) that a student must know to become familiar with a subject or to solve a problem within it. Conceptual knowledge refers to the interrelationships between the fundamental components of a wider framework that allow them to work together. Procedural knowledge implies understanding the procedure and method to do something. Metacognitive knowledge includes awareness of and familiarity with one's own cognition as well as understanding of cognition in general.

Factual, conceptual, procedural, and metacognitive knowledge were found in the analyzed articles (Table 4). Table 4 answers RQ3 which is mentioned in the introduction. The most presented concepts of factual knowledge were, as expected, those related to sustainable tourism, such as sustainability, sustainable development, sustainable business, and commercial aspects of tourisms (n = 25). Conceptual knowledge included, e.g., principles (n= 11), theories (n = 12), and structures (n = 8) of sustainable tourism. In terms of procedural knowledge, practical exercises related to sustainable development were seen to be important issues (n = 10). They included, e.g., strategy analyses. Metacognitive knowledge was used in seven articles. It included a number of components, including ethics, aesthetics, and culture. The process of being—not just alone, but also in community with other humans and non-humans—was the subject of a self-directed research. It encouraged students to constructively debate one another's viewpoints, helped them critically analyze their own thinking, and assisted them in altering their own behavior when in interaction with other people and the natural world [83].

The types of cognitive abilities were analyzed using a hierarchy of cognitive domains. Bloom [90] defined cognitive learning as dealing with "recall or recognition of knowledge and the development of intellectual abilities and skills." The cognitive domain includes six subdomains and deals with developing our mental abilities and acquiring knowledge. The subdomain, remember, concerns the ability to retrieve data and/or information. The subdomain, understand (comprehension), includes the ability to make sense of what one knows and demonstrate understanding through explanations, paraphrases, etc. The subdomain, apply, means the ability to use abstract concepts or apply knowledge in new situations. The subdomain, analyze, is about the ability to distinguish between facts and opinions and to decompose a problem down to its constituent parts. However, the subdomain of synthesizing refers to the capacity to combine several components or ideas into a solid pattern or structure in order to produce new meaning. The second

uppermost subdomain, evaluation, is the ability to assess the significance of concepts, and the uppermost subdomain, create, means that someone produces or brings about something new through a course of action or behavior. This is interpreted as the most complex and complicated form of thinking [83,90]. It also includes skills for personal change and self-actualization.

Table 4. Knowledge levels and cognitive skill levels for supporting sustainable tourism learning based on Bloom's revised taxonomy [83].

Knowledge Levels and Cognitive Skill Levels		Criteria	Article Number	Total
Knowledge levels	Factual knowledge	Terminology of sustainable tourism	[18,19,22,23,25,27–29,33,35,47,59,60,65–70,72,73,75–80]	27
	Conceptual knowledge	Classifications and categories of sustainable tourism; principles and generalizations; and theories, models, and structures of sustainable tourism	[19,22–25,28,29,31,35,47,59,65,67–77,79,80]	25
	Procedural knowledge	Subject-specific techniques and methods, and criteria for sustainable tourism	[18,22,27,33,66,71,75,77–79]	10
	Metacognitive knowledge	Comparing sustainable tourism to traditional tourism; strategic knowledge; and self-knowledge	[18,23,24,29,35,47,59,67,71,72,74,76,78,80]	14
Cognitive skill levels	Remember	Recognizing and recalling	[19,22,25,28,31,33,60,67,68,77,79]	11
	Understand	Interpreting; exemplifying; classifying; summarizing; inferring and comparing; and explaining	[19,23,27,29,47,69,73–78]	12
	Apply	Executing and implementing	[23,24,27,28,59,60,65,69,72,77,78,80]	12
	Analyze	Differentiating; organizing; and attributing	[18,19,22,23,25,29,66,72,75,77,79,80]	12
	Evaluate	Checking and critiquing	[19,24,27,29,31,47,59,60,70,75,77]	11
	Create	Generating; planning; and producing	[18,23,24,33,35,77]	6

The subdomains remember, understand, and apply were represented in all investigated articles (Table 4). The subdomain analyze was mentioned in 12 articles and evaluate in 11 articles. In addition, the subdomain create was not mentioned frequently (n = 6). Synthesize was not mentioned in any article.

To promote sustainability in tourism teaching and learning, SE including psychology, equity, and environmental justice should be integrated into curriculum to improve students' knowledge levels and cognitive skill levels. Compared to general TE, STE is implemented with neoliberalism and SE to improve students' responsibility.

5. Discussion

It is a widespread agreement that sustainable tourism can be accomplished with the help of education [15]. This qualitative survey provides an overview of how tourism education (TE) is taught and learned in higher education institutions. It aims to support the selection of teaching and learning approaches and methods for the education of sustainability-driven tourism.

Firstly, teaching and learning methods in TE for promoting sustainability were analyzed. Both teacher-centred and student-centred teaching methods to teach STE were presented. When the teacher plays the main role, it is spoken as a teacher-centred way of working. On the other hand, when students play the main role, it is spoken as a student-centered way of working. Mentions of teacher-centered teaching methods were rare and included teacher presentations (instructions and teacher inquiries) and discussions be-

tween teacher and students. A previous study of Wang et al. (2008) [91] has shown that teacher-centred methods are used in this kind of situations.

According to the results, student-centred methods were often used in the analyzed articles. When the authority in the classroom is shifted from the teacher to the students through the use of student-centered practices, it encourages the students to be active learners. Here, the teacher acts as a facilitator rather than a knowledge provider [92]. Students who graduate from school with a variety of viewpoints, attitudes, and competencies have benefited from the adoption of many-sided teaching and learning methods [92]. Sustainable tourism learning requires students not only to acquire theoretical knowledge about sustainable tourism, but also to change their own attitudes and actively work for a more sustainable future in tourism. [18]. Learning also occurs implicitly through the "hidden" curriculum [93]. Students are inspired and motivated by the sustainability-related acts of staff and educators, who serve as role models for education about sustainable development [94].

Collaborative and interdisciplinary learning was mentioned in 10 articles. The study confirms the notion that collaborative and interdisciplinary learning is a very useful form of teaching, as it fosters students' knowledge and academic skills in environmental education [85]. It also supports their social skills and understanding of the local geographical features, regional culture, and traditional way of life [87]. Such knowledge and skills are essential for their future career development. Collaborative learning (learning in a group setting) can also engage students who otherwise might not become actively engaged in the study processes [95]. This result supports Rickinson's research [96] which emphasizes the value of teaching methods that include interactivity. Environmental, economic, social, and political issues are integrated with each other in interdisciplinarity [97]. Thus, interdisciplinary learning may have a positive effect on understanding, e.g., on the understanding of issues related to social health care [95] or tourism. It can be promoted through practical experiences [98]. Practical teaching and real-world learning were also emphasized in the studied articles (n = 5 and n = 4 in corresponding order). This result supports a previous study by Jennings et al. [47], according to which real-world learning promotes students' professional development through social learning that supports meaning-making and sense-making by enhancing "education about sustainability" and "education for sustainability". In addition, the merits and impacts of experiential learning (outdoor learning), problem-based learning, case study teaching, and project work were quite well-recognized. The teaching methods mentioned above are useful methods especially when solving environmental questions and gaining experiences from local perspectives [15,39,41,99]. Reflective learning and active learning/constructivistic learning were rarely mentioned, although student-centred methods were valued. They should be used more often, because when reflecting on new experiences in relation to past experiences and focusing on future transformations, reflection can change personal awareness and the ability to act in different contexts [100]. Games, online learning, group learning, and participatory ecological learning were mentioned the least (n = 1 for each teaching method). The reason might be that teachers are sometimes not familiar with student-centred teaching [101,102]. The ability of the teacher to plan and execute effective lessons is essential for high-quality learning. Meaningful teaching includes multiple ways to learn, participate, and practice what students need to know, understand, and do.

Secondly, the key points of the teaching methods in promoting STE were analyzed, and it was discovered that developing collaborative and interdisciplinary learning skills were emphasized as the most important. The results support the study by Häkkinen et al. (2017) [103], which states that the needs of 21st century learning require students to have skills related to collaboration and the strategic regulation of learning in a rapidly changing learning society. Complex problems often cannot be dealt with and solved with the knowledge of just one discipline; a collaborative and interdisciplinary approach enables a comprehensive understanding of issues and phenomena. Collaborative problem solving enables an individual to participate in a process where the participants pool their

knowledge, skills, and efforts to solve a problem. Thus, collaborative problem-solving skills are crucial learning skills to be taken into account in education.

Developing systems thinking skills, experiential learning skills, techniques and methods for raising environmental awareness, and scientific research skills were also presented in many articles. The result can be considered to be related to the following thoughts. Systems thinking, according to Checkland [104], is holistic thinking, which necessitates that what the thinker views as the entire might actually be understood as a portion of an even bigger total. The justification for systems thinking is that any whole is composed of smaller wholes that only exist in connection to the overall whole [104]. Thus, in order to build an integrative understanding, systems thinking is a crucial cognitive ability [105]. Developing systems thinking skills was seen as necessary for tourism students in seven articles, owing to the goal of tourism to address unsustainable tourism behavior and unsustainability. Systems thinking is an essential element of outdoor education for sustainable development (ESD), and addressing complex environmental problems requires systems thinking skills [106]. Students will be prepared to contribute to addressing today's sustainability concerns if they possess the knowledge, the capacity to apply sustainable principles, and the capacity to connect ideas through systems thinking [43].

Developing experiential learning is a student-centered active learning process supported by experience, analysis, and reflection through direct participation [107]. This kind of active learning processes are also important based on our results. They foster students' understanding of the meaning of communication skills and develop their ability to apply the learned information and skills [108]. They also increase knowledge retention [109], increase motivation, and develop advanced learning [110] and practical skills [111]. They can also increase the connections between the cognitive domains and affective domains, and boost social skills [111]. Understanding how humans and the environment interact is known as environmental awareness. Reflecting on experiences, emotions, ideas, beliefs, and information forms the foundation for its development. [112]. Developing techniques for increasing environmental awareness is important. For example, increased environmental awareness of climate change [51] may affect people's view of safeguarding natural and cultural resources. Environmental awareness is important to promote among tourists, e.g., to ensure that they act in an environmentally friendly way [113]. Furthermore, environmental awareness mediates the impacts of green human resource management on proactive pro-environmental performance [114].

Thirdly, we analyzed the knowledge levels and cognitive skill levels for supporting sustainable tourism learning. All four types of knowledge (factual, conceptual, procedural, and metacognitive knowledge) were included in the investigated articles. These results support the study by Glavíc [115] on key issues of ESD. Six different cognitive skills (remember, understand, apply, analyze, evaluate, and create) were mentioned as applicable in STE. Lower-level thinking skills (remember, understand, and apply) and higher-level thinking skills (analyze, evaluate, and create) were discussed in many articles. The three lower-level thinking skills are mainly related to teacher-centred teaching methods and, through them, other cognitive skills, especially memory skills, can be developed [90]. However, when using only these kinds of teaching methods, the higher-level thinking skills, e.g., criticism and evaluation, are easily forgotten [91]. The development of higher-level thinking skills is best supported using student-centered working methods [40]. In line with previous articles, the sustainability competencies that were mentioned in the analyzed articles included the following ones: critical thinking competency [46], systems thinking competency [43], and problem-solving competency [49]. Anticipating competence and strategic thinking competence were not presented in the investigated articles. Thus, the results differ from La Lopa and Day's [42] view concerning sustainability key competencies. Anticipating competence is needed when discussing the qualifications required in marketing and when telling young people about professions and their opportunities in the labor market. Strategic thinking competence in its part is important, e.g., in terms of managing changes in the tourism and hospitality industry [45]. Based on the results of this study, it seems that anticipating

competence and strategic thinking competence should be valued more in teaching and learning processes.

Green or environmental skills [50] and soft skills [54–57] are considered key sustainable skills in TE. In this study, the most often mentioned skills were analyzing, evaluating, and creating. These are higher-level thinking skills which can be seen as parts of green and soft skills [50,54–57]. In line with previous studies, collaborative skills [47] and interpersonal communication skills [53] were emphasized among the soft skills. Collaborative skills include critical thinking, creativity, collaboration, and communication which are needed, for example, in the student's personal and social meaning-making processes [116]. Thus, the results can be considered to be related to the study about self-awareness-based skills by Hakio and Mattelmäki [58] and the study by Daloz [117] where it is stated that the transformative process is focused on personal change and self-actualization. Synthesizing skills were not mentioned. The result is worrisome because, according to previous study [83], the things and elements learned with the help of synthesizing skills merge into a coherent or functional whole and are organized into new models and structures during the teaching and learning process. It is also worrying that cross-cultural understanding, gender equality, disability awareness, and customer service orientation were not mentioned. However, all these skills are important for understanding knowledge use for sustainability, analyzing the sustainability of social-ecological systems, and understanding and evaluating modeling methods for cocreating pathways to sustainability [53]. Thus, they are very important to promote among college students in STE.

6. Main Conclusion and Implications

Sustainability is integrated into the tourism and hospitality management programs in many universities around the world to address the need for sustainable tourism development. This study was planned to answer the following question: which kinds of teaching and learning methods that promote STE and support sustainable tourism learning in TE are used in higher education. By critically the selected articles, the evidence in the articles have led to the following conclusions.

The results presented in this study show that both teacher-centred and student-centred teaching methods to teach STE were presented. Collaborative and interdisciplinary learning was most popular teaching and learning methods. Experiential learning (outdoor learning), problem-based learning, and case study teaching were quite frequently mentioned, whereas practical teaching, project work, and real-world learning were more seldomly mentioned. All these teaching and learning methods were seen as useful, especially when solving environmental questions and gaining experiences from local perspectives. The development of cooperative and interdisciplinary learning skills was seen as the most important key points of teaching methods in promoting STE. Developing systems thinking skills, experiential learning skills, techniques and methods for raising environmental awareness, and scientific research skills were also emphasized.

For the types of knowledge, all types (factual, conceptual, procedural, and metacognitive knowledge) were mentioned. The sustainability competencies that were mentioned included the following: critical thinking competency, systems thinking competency, and problem-solving competency. Anticipating competence and strategic thinking competence were not mentioned. The most important skills were the following higher-level thinking skills: analyzing, evaluating, and creating. These skills could be seen as parts of green and soft skills. For soft skills, collaborative skills and interpersonal communication skills were emphasized.

To the best of our knowledge, despite the fact that research on SDE and TE has been published in sufficient quantity, there are very few studies to draw attention to the important role of teaching and learning methods in supporting sustainable development thinking in STE. Although our analyses on teaching and learning strategies covered a wide range of information, a comprehensive grasp of educational processes is required to fully comprehend all consequences. Of course, every teaching situation is context- and

subject-dependent, thus it is impossible to compile a list of the most or least effective teaching and learning methods. However, the analyses offer suggestions on how to pick these methods to support sustainability elements in TE. In this study and also in previous studies, e.g., [89,92], active teaching and learning techniques are emphasized as factors that enhance students' interest in knowledge of sustainability.

This study emphasized the significance of matching teaching methods and many-sided learning activities to student learning capacities. A way to avoid falling into Kreisel's alleged trap [118] is to create and construct a learning environment where critical thinking is equally emphasized with individual learning experiences. This environment should also include student evaluation and feedback and depend on the effective outcomes of the learning-related values, attitudes, and behaviors [119]. Ultimately, STE aims to cultivate sustainable tourism behavior in university students. Soft skills are important for understanding the different dimensions of sustainable development and the concept of sustainability from the various points of ecological–social–economic systems. Thus, they should be emphasized in teaching and learning processes to promote competencies among college students in STE. The behavioral sciences can make vital contributions to environmental sustainability efforts [120]. Moreover, it has been concluded that self-efficacy and self-concept are necessary for students to create sustainable behavior.

The concept used and the implementation of the present study were negotiated and discussed fully among the researchers throughout the research process, which lends credibility and reliability to the study [121]. The steps taken during the study were meticulously documented in order to review and confirm the results. Two researchers, working independently, each analyzed the data. The researchers compared and debated their classifications once the analysis was complete until a consensus was obtained. The outcomes were also contrasted with those of earlier research.

As for the trustworthiness of the study [121], the design and implementation of the study were negotiated among the researchers throughout the research process. The study procedures were carefully documented to review and verify data throughout the study. The analysis of the data was carried out independently by three researchers. At the end of the analytical process, the researchers compared and discussed their classifications until a unified view was reached. Because of the dialogical nature of the analysis, we did not see a need for calculating inter-rater reliability. Researcher triangulation was an essential part of our analytical process. Our research group consisted of experts in biology, geography and tourism education, environmental education, and sustainability education, with the third member of our research team also being an expert in educational sciences and an experienced teacher educator and researcher. The results were also compared with previous studies. One of the limitations of the study is that we only selected peer-reviewed journal articles as study materials, even though teachers also use other kinds of teaching and learning materials (e.g., textbooks, newspapers, internet, and other kinds of training and reference materials) [122]. This undoubtedly has an effect on the quality of the research materials.

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