

Review

Sustainability Principles in Hospitality Vocational Education in China: A Comprehensive Review

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Abstract: Sustainability is no longer optional-it is a defining imperative for both global education and the hospitality sector, where resource intensity and environmental pressures demand urgent transformation. This study presents a systematic literature review (SLR), guided by the PRISMA framework, to explore how sustainability principles are embedded in China's hospitality vocational education. From an initial pool of 1,032 records, 50 peer-reviewed studies (published between 2015 and 2025) were analyzed. The findings reveal four key themes: curriculum integration, where experiential models such as farm-to-table projects and green restaurant simulations translate theory into practice; industry-education collaboration, which improves employability but remains uneven; regional disparities, with eastern provinces leading while central and western regions lag due to policy and resource gaps; and pedagogical innovations, where project-based learning and digital platforms enhance sustainability literacy yet fall short in driving consistent behavioural change. While notable progress has been made, challenges such as outdated curricula, limited faculty expertise, and unequal access persist. The study concludes that achieving truly transformative and equitable sustainability education requires systemic curriculum reform, targeted faculty development, supportive policy frameworks, and stronger, incentivized industry partnerships.

Keywords: sustainability; vocational education; hospitality; China; systematic literature review

1. Introduction

Sustainability has become a central theme in hospitality vocational education in China, reflecting both global imperatives and national policy priorities. As the hospitality sector is highly resource-intensive, embedding sustainability principles-such as responsible consumption, green skills, and environmental stewardship-into curricula and teaching practices is increasingly viewed as essential for preparing a workforce capable of driving sustainable transformation [1-4]. Approaches range from learner-centered, practical training, such as farm-to-table and green restaurant simulations, to industry-education partnerships that bridge skills gaps and foster employability in sustainable tourism and hospitality sectors. Yet, significant challenges remain: regional disparities in implementation persist, many curricula are outdated, and faculty expertise in green technologies is often insufficient [1,5]. These issues limit the depth and consistency of sustainability education, even as global research calls for more comprehensive integration across vocational institutions [6,7].

Despite a growing body of literature, a systematic understanding of how sustainability principles are embedded across Chinese hospitality vocational education remains limited. Most existing studies emphasize isolated innovations or policy frameworks, leaving gaps in knowledge about the long-term effects of learner-centered methods, the regional variability of implementation, and the effectiveness of faculty development in green technologies [8,9]. Addressing these gaps is urgent, given the mounting pressures of climate change, biodiversity loss, and cultural homogenization that intensify the vulnerability of tourism-dependent economies [10,11]. Without rapid

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reform, vocational education risks producing graduates ill-equipped to contribute to sustainability transitions in the sector.

This review responds to that urgency by synthesizing recent findings, identifying key trends, and highlighting ongoing gaps in the integration of sustainability principles in Chinese hospitality vocational education. Its novelty lies in bringing together fragmented evidence to provide a comprehensive overview that connects curriculum design, pedagogical practices, faculty development, and industry collaboration. In doing so, the review contributes theoretically by extending hospitality education research through the lens of sustainability literacy, practically by identifying best practices and barriers that inform curriculum and policy reform, and politically by situating China's vocational education reforms within the broader framework of the Sustainable Development Goals, particularly SDG 12 on responsible consumption and production [1,3,4,9].

2. Methods

This study employed a systematic literature review (SLR) approach to synthesize existing research on the integration of sustainability principles in Chinese hospitality vocational education. The selection process is illustrated in Figure 1, which depicts the four PRISMA stages: identification, screening, eligibility, and inclusion.

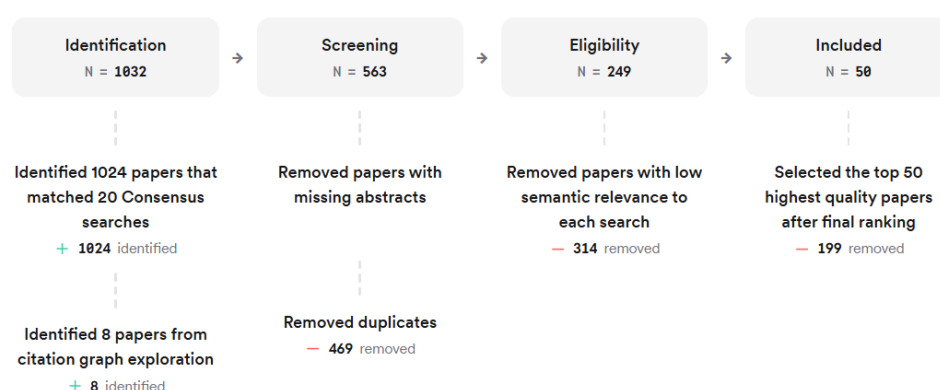


Figure 1. Flow diagram of the search and selection process for included papers.

The search strategy was implemented through Consensus, an AI-powered research database, which integrates over 170 million peer-reviewed articles from major academic repositories such as Semantic Scholar, PubMed, and Scopus-indexed journals. Keywords and Boolean operators were designed to capture four major domains relevant to the study: (1) sustainability principles in education, (2) green skills and environmental stewardship, (3) industry-education integration, and (4) vocational policy and curriculum development in China. Eight unique search groups were developed to ensure comprehensive coverage, combining terms such as "sustainability," "hospitality education," "vocational training," "green skills," and "China".

The initial search identified 1,032 records. After removing duplicates and screening titles and abstracts for relevance, 563 papers were retained for full-text evaluation. Of these, 249 met the eligibility criteria, which included: (a) focus on hospitality or vocational education, (b) explicit discussion of sustainability principles, (c) relevance to the Chinese context or comparable vocational systems, and (d) publication in peer-reviewed journals between 2015 and 2025. Complete inclusion and exclusion criteria are outlined in Table 1. Finally, 50 papers were included in the review, representing a mix of empirical studies, systematic reviews, case studies, and policy analyses.

Table 1. Inclusion and Exclusion Criteria.

Criteria Type.	Inclusion	Exclusion
Publication Type	Peer-reviewed journal articles	Conference papers, editorials, non-peer-reviewed reports
Time Frame	Published between 2015-2025	Published before 2015
Focus	Sustainability principles in vocational or hospitality education	General tourism/hospitality studies without vocational focus
Geographic Scope	Direct relevance to China, or comparative studies applicable to the Chinese context	Studies unrelated to China or vocational education
Content	Explicit integration of sustainability (curriculum, pedagogy, faculty, industry collaboration)	No mention of sustainability or vocational dimension
Methodological Rigor	Clear methodology (empirical study, systematic review, case analysis)	Lack of methodological clarity or insufficient empirical evidence

3. Results

3.1. Integration of Sustainability Principles in Curriculum

A range of approaches has been adopted to integrate sustainability into Chinese hospitality vocational education, each with distinct benefits and challenges (See Table 2). Farm-to-table projects allow students to participate in agricultural sourcing, food preparation, and service in sustainable contexts. These initiatives strengthen supply chain management skills, raise awareness of food sustainability, and support SDG 12, though they are resource-intensive and rely heavily on institutional and industry collaboration [1,9]. Similarly, green restaurant simulations provide safe, controlled environments for practicing low-carbon operations while improving students' problem-solving skills. However, their scalability is limited, as they require significant investment and faculty expertise in green technologies [4,5].

Table 2. Approaches and Challenges in Integrating Sustainability Principles in Chinese Hospitality Vocational Education.

Approach	Description	Benefits/Outcomes	Challenges/Limitations	Key References
Farm-to-Table Projects	Students engage in agricultural sourcing, food preparation, and service in sustainable settings.	Builds awareness of food sustainability; strengthens hands-on skills in supply chain management; aligns with SDG 12.	Resource-intensive; requires strong institutional and industry collaboration.	[1,9]
Green Restaurant Simulations	Simulated hospitality environments are designed around eco-friendly practices.	Provides a safe, controlled environment for practicing low-carbon operations; enhances problem-solving skills.	Limited scalability across institutions; high setup cost and need for faculty expertise in green technologies.	[4,5]
Entrepreneurship in	Projects focused on creating business models with	Fosters innovation, leadership, and	Requires integration of business training with sustainability;	[3]

Sustainable Settings	sustainability as a core value.	entrepreneurial thinking in sustainable tourism.	often elective rather than core.	
Project-Based & Collaborative Learning	Cross-disciplinary projects with faculty, peers, and industry experts.	Improves sustainability literacy; enhances graduate competence and employability; encourages teamwork and critical thinking.	Adoption is uneven across regions; it is dependent on resources and faculty readiness.	[12,13]
Curriculum Integration (Dedicated Courses/Modules)	Inclusion of explicit sustainability-focused courses or modules.	Provides structured knowledge of sustainability principles; signals institutional commitment.	Often limited in scope, sustainability is sometimes treated as an elective rather than a core requirement.	[6,7]

Other strategies emphasize entrepreneurship and collaborative learning. Entrepreneurship in sustainable settings fosters innovation, leadership, and the development of sustainable business models, preparing students to think entrepreneurially about environmental challenges. Yet, such projects often remain electives rather than core curriculum components, which reduces their broader impact [2,3]. Meanwhile, project-based and collaborative learning brings together students, faculty, and industry experts in cross-disciplinary projects that enhance sustainability literacy, employability, and teamwork. Despite their effectiveness, these methods are unevenly adopted across regions and depend on institutional resources and faculty readiness [12,13]. Finally, curriculum integration through dedicated courses or modules offers structured knowledge and signals institutional commitment to sustainability. Still, many programs limit these to isolated courses or electives, preventing sustainability from becoming a central element of vocational education [6,7].

3.2. Industry-Education Collaboration

Industry-education collaboration in Chinese hospitality vocational education takes several forms, each contributing uniquely to sustainability integration. Joint curriculum development, where industry experts co-design courses with educators, ensures that programs remain relevant and adaptable while embedding current sustainability practices. However, this model requires strong institutional-industry networks, which are unevenly available across regions [3,4]. Internships and apprenticeships provide students with structured work experience in hospitality enterprises, enhancing employability and equipping them with real-world sustainability competencies. Yet, such opportunities are limited in less-developed areas, and their quality depends heavily on employer commitment [1,2].

Other collaboration modes strengthen knowledge exchange and innovation. Guest lectures and industry mentoring expose students to updated industry insights, foster networking, and enhance soft skills, though their impact can be restricted by short-term or limited industry engagement [3,5]. Collaborative research and projects on issues like waste reduction or energy efficiency encourage innovation and critical thinking while generating solutions transferable to industry, but they demand substantial resources and long-term commitment from both partners [2,4]. Finally, work-based learning and simulation partnerships-where hotels or restaurants provide facilities or simulated environments-allow students to apply theory in authentic contexts and develop operational sustainability skills. However, these opportunities are often concentrated in urban centers, leaving rural or underfunded institutions at a disadvantage [1,3].

3.3. Regional Disparities and Barriers

Clear regional differences shape how sustainability principles are integrated into hospitality vocational education in China. In eastern provinces, integration is strongest: curricula include dedicated sustainability courses and experiential modules, supported by well-trained faculty with expertise in green technologies and pedagogy. These regions also benefit from robust industry partnerships that offer frequent internships, apprenticeships, and co-designed curricula. Substantial government and private-sector funding enable modern facilities and technology, while strong local policy enforcement aligns education with SDGs. Consequently, graduates in eastern China typically demonstrate high sustainability literacy and employability in sustainable hospitality [1,9].

In contrast, the central and western regions lag. Central China shows partial integration, with sustainability often limited to electives or isolated modules, and faculty expertise unevenly distributed. While internships and collaborations exist, sustainability is not consistently emphasized. Funding and policy support are moderate, producing mixed student outcomes with limited applied skills. Western China faces the greatest challenges: curricula remain outdated with minimal sustainability content, faculty lack training in green technologies, and industry collaboration is weak due to low employer interest. Severe resource constraints and weak policy enforcement further limit progress, leaving graduates with little exposure to sustainability practices or competencies [2-5].

3.4. Pedagogical Innovations and Student Outcomes

Chinese hospitality vocational education has adopted a variety of pedagogical innovations to strengthen sustainability learning. Project-Based Learning (PBL) is among the most effective, enabling students to engage directly with real-world sustainability challenges such as low-carbon restaurant design or waste reduction. These projects foster teamwork, problem-solving, and critical thinking, while significantly improving employability. However, PBL is resource-intensive and depends on skilled facilitators and active industry collaboration, which not all institutions can sustain [1,12]. Similarly, collaborative teaching with industry experts enriches classroom experiences by bridging theory and practice. Through co-teaching, mentoring, and project supervision, practitioners enhance soft skills and professional identity formation, although this approach remains unevenly adopted due to varying levels of industry commitment across regions [2,3].

Technology has also played a role in advancing sustainability education. Digital and e-learning platforms such as online modules, simulations, and blended learning expand access and flexibility, particularly benefiting students in remote areas. These tools increase engagement and satisfaction but face limitations in interactivity and digital access in less-developed regions [13,14]. Complementing these are authentic assessment strategies, which use real-world tasks to align student outcomes with industry needs, improving competency attainment and employability, though they demand significant time and training for proper design [12]. Finally, value-oriented sustainability education seeks to instill long-term ecological responsibility by fostering pro-environmental attitudes. While it shows potential for paradigm shifts, outcomes remain inconsistent, with many students displaying only partial adoption of sustainability values [15].

4. Discussion

The findings of this review demonstrate that sustainability principles are being progressively integrated into Chinese hospitality vocational education, yet the scope, depth, and consistency of these efforts remain uneven. Across the reviewed studies, several converging themes emerge (see Table 3): the growing role of learner-centered and experiential pedagogies, the importance of industry-education partnerships, persistent regional disparities, and the need for faculty development in green technologies. Together,

these themes reflect both the achievements and the continuing challenges of embedding sustainability into vocational training systems.

Table 3. Key claims and supporting evidence identified in these papers.

Claim	Evidence Strength	Reasoning	Papers
Sustainability principles are increasingly integrated into Chinese hospitality vocational education.	Evidence strength: Strong (8/10)	Multiple empirical and review studies show that practical, learner-centered, and industry-linked approaches are being adopted.	[1,3,4,9]
Industry-education collaboration enhances sustainability skills and employability.	Evidence strength: Moderate (7/10)	Case studies and reviews highlight the positive impact of partnerships on curriculum relevance and workforce readiness.	[3,4]
Regional disparities hinder the uniform adoption of sustainability principles.	Evidence strength: Moderate (6/10)	Panel data and qualitative studies reveal that eastern China leads, while other regions lag due to policy and resource gaps.	[1,4,5]
The faculty's lack of green technology expertise is a major barrier	Evidence strength: Moderate (5/10)	Qualitative interviews show 68% of faculty lack green tech knowledge, limiting effective integration.	[5]
Project-based and collaborative teaching improve sustainability competence.	Evidence strength: Moderate (6/10)	Empirical studies demonstrate positive effects on student outcomes and engagement.	[1,12,13]
Students' pro-environmental behaviours are limited by value orientation and a lack of paradigm shift.	Evidence strength: Moderate (4/10)	Survey data show differences in behaviour and call for a shift in environmental education.	[15]

First, the analysis highlights the significance of learner-centered and practice-oriented approaches in cultivating sustainability literacy among students. Initiatives such as farm-to-table projects, green restaurant simulations, and project-based learning provide authentic contexts where students can directly apply sustainability concepts [1,12]. These methods not only strengthen technical skills but also encourage pro-environmental attitudes and entrepreneurial mindsets, which are essential for the hospitality sector's sustainable transformation. Nevertheless, implementation varies widely across institutions. Some schools treat sustainability as a peripheral or elective subject, limiting its potential to effect long-term behavioral change [6,7]. This inconsistency underscores the need for sustainability to be positioned as a core curricular element rather than an add-on.

Second, the findings confirm the crucial role of industry-education collaboration in bridging the gap between academic training and labor market demands. Partnerships with hotels, restaurants, and tourism enterprises enrich curricula, create opportunities for applied learning, and enhance graduate employability [2,3]. However, such collaborations are unevenly distributed, with urban and eastern regions benefiting more than rural or western areas. Moreover, while some enterprises actively embrace sustainability, others prioritize short-term profitability over long-term environmental goals, limiting their willingness to invest in sustainable training initiatives [5]. This indicates that sustainable vocational education cannot rely solely on educational

institutions; it requires stronger alignment with industry incentives and regulatory frameworks.

Third, regional disparities remain a persistent barrier. Eastern China leads in embedding sustainability principles due to better funding, faculty expertise, and closer industry linkages, whereas central and western regions struggle with outdated curricula and weaker policy enforcement [1,9]. This imbalance reflects broader structural inequalities in China's education system and raises concerns about equitable access to quality sustainability education. Without targeted policy support and resource allocation, such disparities may perpetuate unequal workforce readiness across the country.

Fourth, the review identifies a critical gap in faculty capacity and professional development. A significant proportion of vocational educators lack expertise in green technologies and sustainability pedagogy, which constrains the depth of integration [5]. While some institutions have adopted collaborative teaching with industry experts or digital platforms to mitigate this gap, these solutions remain piecemeal. Comprehensive strategies for faculty training and continuous professional development are necessary to ensure that sustainability principles are not only taught but also modelled effectively in the classroom and practical settings.

Finally, while there is evidence of improved student outcomes, including stronger sustainability competencies and enhanced employability, studies also reveal uneven adoption of pro-environmental values [15]. This suggests that technical training alone is insufficient; vocational education must also engage students in reflective and value-oriented learning experiences that cultivate long-term sustainability mindsets. Such an approach aligns with the global call for a paradigm shift in environmental education, emphasizing not just knowledge acquisition but also the development of sustainable identities and behaviours [8].

Taken together, these findings suggest that China's progress in embedding sustainability principles into hospitality vocational education is promising but incomplete. The literature points toward a trajectory of incremental improvement, yet substantial challenges remain in achieving equitable, systemic, and transformative sustainability education nationwide. Addressing these requires multi-level interventions: curricular reform to mainstream sustainability as a core competency; policy mechanisms that reduce regional disparities; faculty development programs in green technologies; and stronger, more incentivized industry-education partnerships. Only through such integrated strategies can vocational education fully realize its potential as a driver of sustainable hospitality development in China.

5. Conclusion

This review demonstrates that sustainability principles are being progressively integrated into Chinese hospitality vocational education, primarily through learner-centered pedagogies, project-based activities, and industry-education collaboration. These approaches have proven effective in enhancing technical competencies, sustainability literacy, and graduate employability. However, the findings also reveal significant challenges, including regional disparities, outdated curricula, limited faculty expertise in green technologies, and uneven adoption of innovative teaching practices. Institutions in more developed regions are better equipped to embed sustainability, while less-developed areas continue to face resource and policy constraints. Although pedagogical innovations improve engagement and skills, their impact on shaping long-term pro-environmental behaviours remains inconsistent. Overall, the review highlights both progress and persistent gaps, underscoring the need for systemic curriculum reform, faculty development, equitable policy support, and stronger industry collaboration to ensure that sustainability education in hospitality becomes comprehensive, consistent, and transformative across China.

5.1. Implications

The review carries significant implications for theory, practice, and policy. Theoretically, it enriches sustainability literature in vocational education by showing how pedagogical innovations, industry collaboration, and regional disparities influence student outcomes. It emphasizes that hospitality education should not only provide technical training but also foster sustainability literacy and environmental values. Practically, the findings stress the importance of embedding sustainability across curricula rather than treating it as an add-on. Effective approaches include project-based learning, collaborative teaching, and digital tools, but these require stronger institutional support and continuous faculty development in green technologies. From a policy perspective, reducing regional disparities is crucial, calling for targeted funding, national policy alignment, and regulations that encourage industry participation in sustainability training.

Overall, China has made progress in integrating sustainability into vocational hospitality education, yet systemic and equitable reform is needed. Coordinated efforts by educators, industry, and policymakers are essential for vocational education to fully serve as a driver of sustainable development in the sector.

5.2. Gaps and Future Research

Despite advances, research gaps remain in the regional implementation of sustainability principles, faculty development in green technologies, and the long-term impact of educational reforms. There is also a need for more empirical studies in less-developed regions and on the effectiveness of industry-education partnerships.

Future research should focus on evaluating the long-term impact of sustainability education reforms, developing faculty expertise in green technologies, and exploring effective models for industry-education collaboration in less-developed regions.

In summary, while significant progress has been made, addressing persistent gaps and fostering continuous innovation are essential for advancing sustainability in Chinese hospitality vocational education.

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