



E-Learning Practices in Hospitality Education: A Thematic Review of Emerging Trends, Challenges, and Future Directions

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Abstract— Digital transformation has reshaped how hospitality management competencies are taught, assessed, and translated into industry-ready skills. This paper presents a thematic review of the academic literature on e-learning practices in hospitality education, synthesizing empirical and conceptual studies published between 1999 and 2025. Following the six-phase thematic analysis approach of Braun and Clarke (2006), 22 peer-reviewed sources were coded, clustered, and mapped into six overarching themes: (1) the evolution and institutional adoption of e-learning; (2) pedagogical models such as blended, flipped, and online practicum learning; (3) immersive and simulation-based technologies, including virtual reality (VR) and gamification; (4) artificial intelligence and generative AI in curriculum design; (5) the COVID-19 pandemic as an inflection point for emergency remote teaching; and (6) industry-academia alignment in competency-based curricula. The review finds that while e-learning enhances flexibility, reach, and engagement, its capacity to replicate the tacit, sensory, and interpersonal competencies central to hospitality service delivery remains contested. Persistent challenges include the digital divide, faculty readiness, assessment integrity, and the erosion of experiential learning. The paper concludes with a future research agenda centred on hybrid immersive technologies, adaptive and AI-mediated learning, and competency-based micro-credentialing, offering implications for hospitality educators, curriculum designers, and policymakers.



Keywords— e-learning, hospitality education, thematic review, online learning, virtual reality, generative artificial intelligence, blended learning, tourism education

I. INTRODUCTION

Hospitality management education occupies a distinctive position within higher education because its graduate competencies are simultaneously cognitive, procedural, and interpersonal. Curricula must cultivate technical knowledge of operations, finance, and revenue management alongside intangible service skills such as empathy, cultural sensitivity, and real-time problem solving (Alexakis & Jiang, 2019; Lefever & Withiam, 1998). For most of the twentieth century, this dual mandate was delivered predominantly through face-to-face instruction supplemented by on-site practicums in teaching hotels, kitchens, and simulated front-office environments. The diffusion of information and communication

technologies (ICT) into higher education from the late 1990s onward, however, began to reshape the delivery of hospitality curricula, prompting educators to ask whether — and how — the experiential, high-touch character of hospitality training could be reconciled with the flexibility and scalability offered by electronic and online learning environments (Werthner & Klein, 1999).

Early scholarship framed e-learning in tourism and hospitality as an emergent but marginal field of enquiry, noting that mainstream educational-technology research had, at the time, produced little discipline-specific evidence (Cantoni et al., 2009). Sigala (2002, 2004) was among the first to systematically theorise how internet-based pedagogy could be aligned with the experiential

learning philosophy that underpins hospitality curricula, while Sigala and Baum (2003) situated e-learning within a broader set of structural pressures facing tourism and hospitality higher education, including internationalization, industry volatility, and changing student demographics. Two decades later, the terrain has shifted considerably: cloud-based learning management systems, mobile applications, virtual and augmented reality (VR/AR), gamified simulations, and — most recently — generative artificial intelligence (GenAI) tools such as ChatGPT have moved from peripheral experiments to mainstream components of hospitality curricula (Chandra et al., 2022; de la Mora Velasco et al., 2025).

The COVID-19 pandemic acted as an unplanned natural experiment that compressed years of anticipated digital transformation into a matter of weeks, forcing hospitality schools worldwide into emergency remote teaching (ERT) and exposing both the strengths and the fragilities of e-learning in a discipline that depends heavily on tacit, sensory, and relational skill formation (Amin et al., 2021; Gurban & Almogren, 2022; Prabhu M et al., 2021). In the years following the acute phase of the pandemic, institutions have not simply reverted to prior practice; rather, hybrid, technology-augmented models — supported by simulation software, virtual hotels, and increasingly by AI-driven tools — have become an enduring feature of the hospitality education landscape (Deale et al., 2021; de la Mora Velasco et al., 2025).

Despite this rapid evolution, the literature on e-learning in hospitality education remains fragmented across disciplinary silos — educational technology, tourism management, and information systems — with few attempts to synthesize findings into a coherent thematic map. This paper addresses that gap by conducting a thematic review of the literature to answer three research questions: (1) What are the dominant themes characterizing e-learning practice and research in hospitality education? (2) What challenges recur across these themes? and (3) What future directions do these themes suggest for research and practice? The remainder of the paper proceeds as follows: Section 2 outlines the thematic review methodology; Section 3 presents six themes derived from the literature; Section 4 consolidates cross-cutting challenges; Section 5 discusses the findings against relevant pedagogical and technology-acceptance theory; Section 6 proposes future research directions; and Section 7 concludes the paper.

II. METHODOLOGY

This paper adopts a thematic review design, a qualitative synthesis method suited to mapping conceptual and

empirical patterns across a heterogeneous body of literature rather than pooling quantitative effect sizes as in a meta-analysis. The review followed the six-phase thematic analysis framework of Braun and Clarke (2006) — familiarization, initial coding, theme searching, theme review, theme definition, and reporting — applied at the level of the literature corpus rather than primary interview data, an approach increasingly used in hospitality and tourism education reviews (de la Mora Velasco et al., 2025). The identification and selection of sources was informed by the reporting logic of the PRISMA guidelines for transparency in study identification, screening, and inclusion (Page et al., 2021), although, consistent with a thematic rather than systematic review design, the objective was conceptual saturation across themes rather than an exhaustive census of every published study.

2.1 Search Strategy and Sources

A structured search was conducted across academic databases and publisher platforms (Elsevier ScienceDirect, Taylor & Francis Online, SAGE Journals, Springer Nature Link, and Google Scholar) using combinations of the keywords "e-learning," "online learning," "hospitality education," "tourism education," "virtual reality," "gamification," "generative artificial intelligence," and "COVID-19." The search was restricted to peer-reviewed journal articles, book chapters, and conference proceedings published in English between 1999 and 2025, spanning the foundational period of internet pedagogy research in tourism and hospitality (Werthner & Klein, 1999) through to the emergence of generative-AI-focused scholarship (de la Mora Velasco et al., 2025).

2.2 Inclusion and Exclusion Criteria

Sources were included if they: (a) addressed e-learning, online learning, or digitally mediated instruction explicitly within a hospitality, tourism, or closely allied hotel-and-catering management education context; (b) reported empirical findings, theoretical frameworks, or structured practitioner reflection; and (c) were published in indexed, peer-reviewed outlets. Sources were excluded if they concerned e-learning in unrelated disciplines with no hospitality-specific findings, or if they addressed information technology in hospitality operations (e.g., revenue-management systems) without an educational dimension. Twenty-two sources satisfied these criteria and form the evidentiary base for the themes reported in Section 3.

2.3 Thematic Coding and Analysis

Each source was read in full and open-coded for recurring concepts (e.g., "digital divide," "simulation," "tacit skill," "faculty readiness"). Codes were then clustered iteratively into candidate themes, cross-checked against

the source material to confirm coherence and distinctiveness, and refined into the six final themes presented below. Where a study contributed evidence to more than one theme — for instance, COVID-19 studies that also addressed simulation-based learning — it was coded and discussed under each relevant theme, consistent with standard practice in thematic literature synthesis.

III. THEMATIC FINDINGS

Six interrelated themes emerged from the thematic coding process: (1) the evolution and institutional adoption of e-learning in hospitality education; (2) pedagogical models for online and blended delivery; (3) immersive and simulation-based technologies; (4) artificial intelligence and generative AI in curriculum design; (5) COVID-19 as an inflection point for emergency remote teaching; and (6) industry-academia alignment in competency-based curricula. Each is discussed in turn.

3.1 Theme 1: Evolution and Institutional Adoption of E-Learning

The earliest stream of literature documents a gradual and uneven institutional adoption of e-learning in hospitality schools. Cantoni et al. (2009) mapped the field and found that, relative to the wider educational-technology literature, discipline-specific research on e-learning in tourism and hospitality was sparse, with the specialized database of the Association for the Advancement of Computers in Education returning no dedicated tourism-related entries at the time of their study. Sigala (2002) argued that internet pedagogy held particular promise for hospitality education because it could support experiential and constructivist learning models already valued in the discipline, while Sigala (2004) subsequently identified specific factors — including learner readiness, interface design, and instructor facilitation — that determine e-learning effectiveness in tourism and hospitality settings. Nair and George (2016) extended this line of enquiry to the Southeast Asian context, showing that Singaporean polytechnic-based hospitality schools had begun to meaningfully integrate e-learning despite persistent industry scepticism rooted in hospitality's identity as a "high-touch" profession in which many core competencies are considered intangible and resistant to technological mediation. Collectively, this theme establishes that adoption of e-learning in hospitality education has never been merely a matter of technological availability; it has been continuously negotiated against disciplinary assumptions about the primacy of face-to-face, embodied service training.

3.2 Theme 2: Pedagogical Models for Online and Blended Delivery

A second theme concerns the pedagogical models through which hospitality educators have translated e-learning affordances into classroom and practicum practice. Flipped-learning designs, in which foundational content is delivered asynchronously online and class time is reserved for applied practice, have been tested specifically for hospitality skills and management courses, with findings suggesting improved learning attitudes even though transmitting sensory dimensions of service — such as the colour, aroma, and taste of food and beverage products — remains difficult to replicate through screen-mediated instruction. Blended and online practicum models have likewise been explored: Alexandra and Choirisa (2021) examined hospitality students' e-loyalty to online practicum courses during the pandemic in Indonesia, finding that perceived usefulness, shaped by information and system quality, was a significant driver of students' continued engagement with online practical coursework. Complementing this, Fuchs (2022) investigated in-house, university-led training programmes introduced as a substitute for industry placements, reporting that students perceived structured in-house training as a partially effective, if imperfect, alternative to authentic workplace internships. Deale et al. (2021) surveyed hospitality and tourism educators on their use of simulations as teaching tools, finding that simulation-based methods were valued for bridging the gap between theoretical instruction and operational decision-making, particularly in revenue management, food and beverage control, and event-planning modules.

3.3 Theme 3: Immersive and Simulation-Based Technologies

A third theme captures the growing role of immersive technologies — virtual reality, augmented reality, and gamified simulations — in compensating for the loss of hands-on training opportunities. Because hospitality competencies are procedural and often safety- or service-critical, simulation-based and game-based environments allow students to rehearse front-office, housekeeping, and guest-interaction scenarios repeatedly and without operational risk. Viglia et al. (2018) situated these tools within a broader account of information technology's expanding role in hospitality curricula, arguing that virtual environments can extend, rather than replace, the experiential learning traditionally delivered in teaching hotels and restaurants. Ajanovic (2014) similarly catalogued the range of modern ICT solutions — including simulation software and virtual property-management systems — that hospitality and tourism curricula were beginning to incorporate, while cautioning that pedagogical integration lagged behind technical availability. The broader literature on gamified and

immersive learning environments indicates that such tools are associated with higher motivation, engagement, and self-efficacy relative to conventional instruction, and that they offer opportunities for personalised and collaborative learning; however, empirical evidence specific to hospitality remains comparatively limited relative to fields such as engineering or medical simulation, suggesting a continuing evidentiary gap between the promise and the demonstrated learning impact of immersive technologies in this discipline.

3.4 Theme 4: Artificial Intelligence and Generative AI in Curriculum Design

A fourth and rapidly expanding theme concerns the integration of artificial intelligence — and, since 2023, generative AI tools such as ChatGPT — into hospitality curricula. de la Mora Velasco et al. (2025) reviewed instructional strategies across tourism and hospitality education and identified AI-enabled personalization and content generation as an emerging pedagogical frontier, alongside more established strategies such as experiential learning, case-based teaching, and industry mentorship. Scholarship on generative AI more specifically has examined how large language models can support curriculum design, assist with case-study generation, simulate stakeholder perspectives for negotiation and service-recovery training, and provide on-demand tutoring, while simultaneously raising concerns about academic integrity, overreliance, and the erosion of critical-thinking practice among students. This theme intersects closely with Theme 3, since AI-driven conversational agents are increasingly embedded within simulation and virtual-training platforms to create adaptive, responsive practice environments rather than static, pre-scripted scenarios.

3.5 Theme 5: COVID-19 as an Inflection Point for Emergency Remote Teaching

The fifth theme, and the most densely populated in the reviewed literature, concerns the pandemic-driven shift to emergency remote teaching (ERT) between 2020 and 2022. Multiple studies converge on the finding that hospitality education was disproportionately disrupted relative to less experientially oriented disciplines, because its pedagogy depends on physical proximity, sensory feedback, and face-to-face guest-service rehearsal. Prabhu M et al. (2021), applying the Theory of Transactional Distance to a sample of hospitality students in India, found that interaction with course content was the strongest predictor of perceived learning during ERT, with self-efficacy moderating the relationship between content interaction and perceived learning outcomes. Amin et al. (2021) similarly examined the determinants of e-learning effectiveness among tourism education students during

COVID-19, while Gurban and Almogren (2022) documented patterns of students' actual use of e-learning platforms in higher education during the pandemic more broadly. Coman et al. (2020) reported that, across higher education generally, students' perspectives on online teaching during the pandemic were mixed, shaped by infrastructure access, self-regulation capacity, and the adequacy of institutional support — findings echoed in the hospitality-specific literature, where practical, skills-based components of the curriculum were repeatedly identified as the most difficult to replicate online. Chandra et al. (2022) subsequently synthesized the issues and challenges of online hospitality and tourism education emerging from this period, framing the pandemic not as a temporary disruption but as a catalyst that permanently altered institutional expectations about the role of digital delivery in the discipline.

3.6 Theme 6: Industry-Academia Alignment and Competency-Based Curricula

The sixth theme addresses the longstanding concern that hospitality curricula — whether delivered face-to-face or online — must remain closely aligned with the competencies demanded by industry employers. Lefever and Withiam (1998) offered an early account of how industry practitioners evaluate the relevance of hospitality curricula, a concern that has persisted into the digital era. Alexakis and Jiang (2019) empirically examined the competencies considered essential by hospitality managers, finding that the large majority of essential competencies were "soft" or interpersonal in nature rather than purely technical, a finding with direct implications for e-learning design, since interpersonal competencies are traditionally regarded as the most difficult to cultivate through screen-mediated instruction. This theme reinforces a tension that runs through the entire review: e-learning technologies are comparatively well suited to transmitting declarative and procedural knowledge, but their capacity to develop the soft, relational competencies that employers rank as most essential remains an open empirical question.

IV. CROSS-CUTTING CHALLENGES

Synthesizing across the six themes, five cross-cutting challenges recur throughout the reviewed literature.

- Erosion of experiential and sensory learning. The most frequently cited challenge is the difficulty of transmitting tacit, sensory, and psychomotor competencies — such as culinary technique, service choreography, and non-verbal guest interaction — through online or screen-mediated instruction, a concern raised consistently from the earliest e-learning studies (Sigala, 2002) through

to pandemic-era evaluations of flipped and remote delivery.

- Digital divide and infrastructural inequity. Variation in students' access to reliable internet connectivity, appropriate devices, and quiet study environments has been shown to shape both perceived and actual learning outcomes, with COVID-19-era studies documenting substantial disparities in access across institutions and regions (Coman et al., 2020; Gurban & Almogren, 2022).
- Faculty readiness and pedagogical redesign. Effective e-learning requires more than the digitization of existing face-to-face content; it requires redesigned pedagogy, instructor facilitation skill, and sustained professional development, a requirement identified as a determinant of e-learning effectiveness as early as Sigala (2004) and reaffirmed in more recent reviews of instructional strategy in the discipline (de la Mora Velasco et al., 2025).
- Assessment integrity and academic honesty. The advent of generative AI tools has intensified longstanding concerns about assessment design in online and hybrid hospitality courses, as conventional written assignments and case analyses become increasingly susceptible to AI-assisted completion, prompting calls for authentic, performance-based, and simulation-embedded assessment.
- Industry skepticism and legitimacy. Because hospitality is widely regarded by employers as a high-touch profession, industry stakeholders have at times questioned whether e-learning graduates possess equivalent readiness to those trained through conventional face-to-face and on-site practicum routes, a skepticism documented in early adoption studies and persisting in discussions of competency alignment (Nair & George, 2016; Alexakis & Jiang, 2019).

V. DISCUSSION

Read together, the six themes suggest that the trajectory of e-learning in hospitality education has not been a simple linear progression from face-to-face to fully online delivery, but rather an iterative process of negotiation between technological affordance and disciplinary identity. Early theorization by Sigala (2002, 2004) and Sigala and Baum (2003) anticipated many of the tensions that would later surface empirically during the pandemic: that e-

learning effectiveness depends heavily on instructional design and learner interaction, and that hospitality's experiential character imposes distinctive constraints on what can be meaningfully digitized. The COVID-19 literature (Theme 5) provided an unplanned large-scale test of these earlier theoretical claims, largely confirming that content interaction and self-efficacy shape perceived learning (Prabhu M et al., 2021), while also revealing the practical limits of remote delivery for skills-based components of the curriculum.

The emergence of immersive and AI-enabled technologies (Themes 3 and 4) can be read as a direct institutional response to the central tension identified across the review: the difficulty of transmitting tacit, sensory, and interpersonal skills online. Virtual reality, gamified simulation, and AI-mediated role-play do not eliminate this tension, but they represent an evolving technological attempt to narrow the gap between the flexibility of digital delivery and the experiential depth of face-to-face training. At the same time, the persistence of industry concerns about soft-skill development (Theme 6) suggests that technological sophistication alone is unlikely to resolve the underlying pedagogical challenge; curriculum designers must continue to pair digital tools with deliberately designed opportunities for authentic, ideally in-person, interpersonal practice.

Two theoretical threads recur across the reviewed studies and merit explicit acknowledgement. The first is the Theory of Transactional Distance, used by Prabhu M et al. (2021) to explain how interaction — with content, instructors, peers, and technology — shapes perceived learning in remote hospitality education; this framework helps explain why simulation and AI-mediated tools, which increase interactivity relative to static online content, are consistently associated with more favourable learning outcomes. The second is a broadly constructivist and experiential-learning orientation, evident since Sigala's (2002) foundational argument that internet pedagogy is compatible with hospitality's experiential learning tradition provided it is designed to support active, applied engagement rather than passive content consumption. Together, these threads suggest that the effectiveness of e-learning in hospitality education is less a function of the technology deployed than of the degree of meaningful interaction and applied practice that the technology is designed to support.

VI. FUTURE RESEARCH DIRECTIONS

Building on the themes and challenges identified above, five directions for future research and practice are proposed.

- Longitudinal and comparative evaluation of immersive technologies. Most VR- and gamification-related evidence in hospitality education remains descriptive or exploratory; longitudinal studies comparing skill retention and transfer between VR-based, blended, and traditional practicum training would strengthen the evidentiary base for investment decisions.
- Responsible integration of generative AI. Future research should examine how generative AI tools can be embedded into hospitality curricula to support personalized tutoring, scenario simulation, and formative feedback, while developing assessment models and academic-integrity frameworks specifically suited to an AI-augmented learning environment (de la Mora Velasco et al., 2025).
- Equity-focused implementation research. Given documented disparities in infrastructure and access (Coman et al., 2020), further research should investigate how institutions in resource-constrained contexts can implement effective e-learning without exacerbating existing inequities among students.
- Faculty development models. Because instructor facilitation skill is repeatedly identified as a determinant of e-learning effectiveness (Sigala, 2004), future work should evaluate structured faculty-development programmes specific to hospitality e-pedagogy, including training in simulation facilitation and AI-tool integration.
- Competency-based and micro-credential pathways. Building on evidence that employers privilege soft, interpersonal competencies (Alexakis & Jiang, 2019), future curriculum-design research should explore how modular, competency-based e-learning pathways and micro-credentials can be structured to demonstrably certify both technical and interpersonal readiness for industry.

VII. LIMITATIONS

This review is subject to several limitations. First, as a thematic rather than fully systematic review, the search strategy, while structured, was not exhaustive of every database and grey-literature source and the corpus of 22 sources— while sufficient for thematic saturation — is smaller than that typically assembled for a full systematic review or meta-analysis. Second, the pace of development in generative AI means that scholarship in this specific area is evolving rapidly, and findings reported here should be understood as reflecting the literature available up to 2025 rather than a definitive account of AI's role in

hospitality education. Third, the review synthesizes studies conducted across diverse national and institutional contexts, and while this diversity strengthens the generalizability of cross-cutting themes, it may also mask context-specific variation in how e-learning challenges and opportunities manifest.

VIII. CONCLUSION

This thematic review has traced the evolution of e-learning practice and research in hospitality education from its early theorisation as a promising extension of experiential pedagogy (Sigala, 2002) through its pandemic-driven mainstreaming (Chandra et al., 2022; Prabhu M et al., 2021) to its current, technologically expanded form incorporating immersive simulation and generative AI (de la Mora Velasco et al., 2025). Across six themes, a consistent tension emerges between the flexibility, scalability, and reach that digital delivery affords and the tacit, sensory, and interpersonal competencies that define hospitality as a high-touch profession. Rather than treating this tension as an obstacle to be eliminated, the reviewed literature increasingly frames it as a design problem to be managed through hybrid pedagogical models, purposefully interactive technologies, and sustained attention to equity and faculty capability. As hospitality education continues to integrate immersive and AI-enabled tools, its long-term success will depend less on the sophistication of the technology adopted than on the degree to which that technology is deliberately designed to preserve and extend, rather than replace, the interactive and experiential core of hospitality learning.

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