



Enhancing Tourism Student Decision-Making Skills: A Needs Assessment for Developing a Virtual Tourism Integrated Experiential-Based Learning Model

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ABSTRACT

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Virtual Tourism, Experiential Based-Learning, Needs Assessment, Tourism Education, Decision-Making Skills.

This study sought to evaluate the necessity of formulating an experiential learning framework incorporating virtual tourism to augment decision-making competencies among undergraduate students majoring in tourism within China. By surveying 501 students enrolled in five universities situated across locales in Shanxi and Yunnan provinces, the investigation employed an online questionnaire to scrutinize the requisites for decision-making proficiency and experiential learning integrated with virtual tourism. Key discoveries encompass a pronounced demand for knowledge acquisition, particularly emphasizing the significance of expert

insights (with the highest modified Positive Need Index, PNI modified, of 0.455) in intricate decision-making scenarios, alongside a propensity for practical decision-making opportunities. Concerning skill development, the capacity to swiftly formulate decisions during exigencies was accorded primacy (PNI modified of 0.250). On an emotional plane, the imperative of maintaining rationality amidst pressure was underscored (PNI modified of 0.250). Within the realm of virtual tourism education, real-time interaction and peer feedback emerged as pivotal, alongside the accessibility of resources and the centrality of immersive experiences. These discernments elucidate the imperative for devising a tailored pedagogical framework that addresses the specific exigencies of students in cultivating decision-making acumen and proficiency in virtual tourism education.

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Introduction

Recent advancements in technology, particularly the emergence of Virtual Reality (VR), Augmented Reality (AR), and the internet, have significantly reshaped conventional notions of tourism (Verma et al., 2022). The advent of virtual tourism, propelled by its cost-effective and innovative methodologies, has extended the parameters of tourism beyond physical travel, encompassing virtual realms and cognitive experiences, thus paving new avenues for the future evolution of the tourism sector (Pestek & Sarvan, 2020). Verma et al. (2022) conducted an extensive review of 1,652 dispersed publications spanning from 2000 to 2021, revealing that the convergence of various elements within virtual tourism, including smartphones, AR, VR, big data, and artificial intelligence/machine learning, is fundamentally altering the virtual tourism landscape in alignment with self-determination theory. Lee and Kim (2021) posit that the utilitarian aspects of virtual tourism encompass information accessibility, traffic management, and interactive capabilities, while its hedonic facets involve traffic dynamics, interactivity, and telepresence. Numerous scholarly works have demonstrated that employing immersive and inquiry-based learning methodologies not only facilitates students' comprehension of abstract concepts and enhances their motivation and academic performance but also fosters the application of theoretical knowledge to real-world scenarios, thereby bolstering practical competencies. For instance, Xu et al. (2023) illustrated the positive impact of integrating a virtual tourism experiential model into practical teaching within the tourism management program at Chongqing Normal University, resulting in enhanced professional aptitude, practical skills, learning outcomes, and responsiveness among students.

According to research by Ye and Law, (2021), the COVID-19 pandemic has adversely affected 75 million jobs and led to the displacement of 1 million individuals from employment. The transformations occurring within the tourism industry carry profound implications for national educational frameworks (Ye & Law, 2021). The pandemic-induced disruptions have impeded the efficacy of academic research and enrolment processes, thereby accentuating the imperative for educational reform and prompting academics to embrace innovative pedagogical approaches (Tilak & Kumar, 2022). VR and AR represent forefront educational innovations, with their interactive digital content poised to supplant conventional teaching methodologies (Jumani et al., 2022; Marrahi-Gomez & Belda-Medina, 2022; Pathania et al., 2023).

The development of decision-making competencies holds paramount importance for students in the field of tourism, as it directly influences the holistic enhancement of individual capabilities and the continuous advancement of the tourism industry (Tang et al., 2020). Proficient decision-making skills serve as a cornerstone for positioning tourism students as pivotal contributors to the industry's future, fostering sustainable growth and innovation within the sector (Haiyan Ye et al., 2021). Amidst the complexities of the current era marked by crises, making informed decisions has become increasingly challenging (Ali & Al-Aali, 2016). The ability to make sound decisions not only shapes one's trajectory but also impacts personal and societal outcomes (SAMANCI & Mazlumoğlu, 2023). Adolescents demonstrating heightened decision-making abilities often exhibit fewer maladaptive behaviours such as delinquency, substance abuse, and precocious sexual activity (Parker et al., 2017). Empirical evidence indicates that students' decision-making prowess moderately correlates with their academic performance and problem-solving proficiencies (Tanglang & Ibrahim, 2015; Yurtseven et al., 2021).

In 2019, the Chinese Ministry of Education explicitly underscored the imperative of education in nurturing high-calibre talent and enhancing its capacity to contribute to economic and social progress, with a particular emphasis on refining students' decision-making competencies. Strengthening the decision-making skills of tourism students not only enhances their adaptability and problem-solving acumen but also significantly augments the managerial aptitude, service quality, and crisis management capabilities of future industry professionals. Moreover, it yields positive cascading effects by fostering socioeconomic development, promoting cultural exchange and comprehension, and advancing the attainment of sustainable development objectives (Casal-Ribeiro et al., 2023; Eaknarajindawat, 2023; Zuccoli & Korstanje, 2023). Hence, in an era characterized by uncertainties, bolstering the cultivation of decision-making skills, particularly among adolescents and aspiring professionals, is pivotal for personal growth and societal advancement.

As an educational instrument, virtual tourism offers students immersive learning opportunities pertaining to diverse subjects such as geography, history, and culture (Siddiqui et al., 2022). Educational institutions can enrich students' knowledge base and broaden their cultural horizons by integrating classroom instruction with real-world encounters facilitated through virtual tourism (Grammatikopoulou & Grammalidis, 2023; Perotti et al., 2020). Experiential learning, with its emphasis on practical engagement and reflective practices, has demonstrated significant advantages within the domain of tourism education (Abdulwahed & Nagy, 2009; Haleem et al., 2022; Juelu & Tingting, 2020; Kolb, 2014). However, scholarly exploration regarding the enhancement of tourism students' decision-making skills through the integration of virtual tourism with an experiential learning framework remains notably limited.

Henceforth, we present the following pivotal inquiries for investigation: 1) What are the educational requisites necessary for augmenting decision-making competencies among students engaged in tourism studies? 2) What are the constituent elements involved in amalgamating virtual tourism with an experientially based instructional framework? Through the exploration of these inquiries, the objective is to refine the virtual tourism pedagogical paradigm further, thereby enhancing the decision-making proficiencies of prospective industry practitioners. This endeavour aims to furnish valuable insights and recommendations conducive to the diversification and sustainable progression of the global tourism sector. The evolution of the forthcoming tourism landscape will be shaped by various determinants, encompassing technological advancements, ecological preservation endeavours, economic globalization trends, shifts in consumer behavioural patterns, and socio-cultural dynamics. Within this milieu, the convergence of virtual tourism and experiential learning is anticipated to exert a notable influence on tourism experiences, sustainable development initiatives, marketing strategies, educational curricula, as well as planning and managerial practices.

Literature Review

Learning Needs Assessment

The assessment of learning needs represents a fundamental procedure for discerning the disparity between learners' current competencies and their desired skill levels, with the

overarching objective of designing and appraising efficacious educational initiatives. This evaluative process endeavours to ascertain that educational content aligns with identified needs, resources are utilized judiciously, learning outcomes are augmented, personalized learning avenues are facilitated, and instructional methodologies are continually refined. Introduced by Deechai et al. in 2019, the PNI Modified stands as a quantitative instrument for gauging the urgency of educational or training requirements. Through the juxtaposition of the desired proficiency level (E) against the extant status (D), this metric assists educators in delineating the most critical and time-sensitive areas necessitating attention.

The operationalization of the PNI Modified entails delineating educational or training imperatives, evaluating the anticipated level (E) and existing satisfaction (D) pertaining to each imperative, employing the PNI Modified formula $[(E - D) / D]$ to compute priorities, stratifying imperatives based on resultant scores, and subsequently devising resource allocation strategies and action plans commensurate with identified needs. Subsequently, the execution of the devised plan ensues, with periodic reviews conducted to recalibrate priorities, thereby establishing a cyclical process of continual enhancement. Needs assessments entail methodical approaches to gathering information aimed at informing reasoned decision-making processes. The utilization of PNI Modified furnishes an expedient mechanism to optimize educational frameworks integrating virtual tourism and experiential learning by accurately pinpointing and prioritizing the developmental imperatives pertaining to strategic planning and decision-making proficiencies, thereby ensuring targeted allocation of resources towards the most exigent learning domains.

Virtual Tourism Integrated Experiential-Based Learning

The term "virtual tourism" encompasses diverse interpretations, with the term "virtual" denoting an experiential-based reality as expounded by Kant (2023). LaValle (2023) underscores the dynamic evolution of VR technology and highlights the critical considerations regarding its conceptualization. Moreover, it is imperative for the concept to maintain a universality that transcends specific distinctions. Indeed, terms such as XR, Extended Reality, VRIAR, ARIVR, VRIAR/MR, which have been entrenched for decades, have witnessed a decline in prominence in recent years. Central to the notion of virtual reality is the alteration of the user's perceptual reality through engineering, rather than merely gauging the environment's resemblance to either "real" or "virtual" realms. In this context, this study embraces a comprehensive definition of virtual reality, encompassing technologies facilitated by display devices like headsets, controllers, computers, and smartphones. Virtual tourism offers individuals the opportunity to partake in high-definition, enduring travel experiences at a nominal cost, with heightened efficiency and security, tailored to their preferences and volition (Siddiqui et al., 2022).

Scholarly discourse on virtual tourism delineates definitions from four distinct perspectives: technological, experiential, marketing, and educational. Virtual tourism entails the utilization of cutting-edge technologies such as computer graphics, virtual reality, and internet infrastructure to replicate real-world scenarios, furnishing users with immersive and interactive virtual travel platforms and virtual experience applications (Sun et al., 2019). Key components of virtual tourism predominantly encompass virtual environments, navigation and user interface mechanisms, multimedia content dissemination, social interactivity features, and activity tracking functionalities.

Experiential learning methodologies boast a rich historical lineage, with Confucius (circa 450 BC) famously articulating, "Tell me, and I will forget. Show me, and I may remember. Involve me, and I will understand," encapsulating the enduring ethos of experiential learning (Fromm et al., 2021). Virtually unanimous among scholars in the domain is the recognition of the pivotal role of experiences and the centrality of reflection, which constitute the cornerstone of experiential learning pedagogy. Profound experiential learning engagements afford students the opportunity to engage in reflection, recalibration, response, innovation, reformulation, and practical application of acquired knowledge (Chan, 2022). A panoply of experiential-based learning modalities, including case studies, role-playing exercises, field excursions, and simulations, exhibit versatile applicability across diverse disciplines such as business, education, and science. Case studies prompt students to bridge theory with practice, while role-playing endeavours foster the cultivation of communication, collaboration, and emotional intelligence competencies (Patil et al., 2020). Field excursions deepen theoretical comprehension, whereas simulations offer a secure setting for skills refinement. By harnessing the advantages inherent in field excursions and transposing them into virtual classrooms and simulated field experiences, educators can augment instructional efficacy. Thus, educators are encouraged to capitalize on these methodological strengths when crafting curricula, with the aim of achieving comparable educational outcomes to those facilitated by conventional field excursions (Jones & Washko, 2022).

An extensive corpus of scholarly inquiry and literature pertaining to exemplary experiential learning paradigms underscores the indispensability of experience, reflection, and application as intrinsic elements thereof. Theorists contend that the objectives of experiential learning often remain nebulous, prioritizing the learning process over predefined outcomes. Central to adult developmental processes, reflective experiences assume a pivotal role within higher education contexts where learning objectives may lack clarity, and assessments of learning outcomes are sometimes overlooked. Detailed scrutiny of these dynamics is elucidated in Table 1.

Table 1

Components of Experiential-Based Learning Models

Components	Kolb (2014)	Dewey (1986)	Freire (2014)	Mezirow (2001)	Gaskin and Berente (2011)	Andresen et al. (1999)	(Lewis & Williams, 1994)	This study
Experience	✓	✓	✓	✓	✓	✓		✓
Reflection	✓	✓	✓	✓	✓	✓	✓	✓
Abstract concept	✓				✓			
Action	✓				✓	✓	✓	✓
Assessment						✓	✓	✓
Objectives							✓	✓

Nevertheless, the discourse surrounding experiential learning predominantly adopts a descriptive stance, lacking substantial empirical evidence substantiating learners' acquisition of the specified competencies. It is only through experiential learning initiatives

characterized by well-defined objectives, expert guidance, and rigorous assessment protocols that true efficacy and credibility are attained (Lewis et al., 1994). In pursuit of enhanced pedagogical outcomes, we have assimilated the insights gleaned from experiential learning in practical applications. We delineate the constituents of experiential learning as comprising objectives delineation, experiential immersion, reflective processes, action-oriented engagement, and systematic assessment methodologies.

Decision-Making Skills

Decision-making skills are widely recognized as essential competencies in the 21st century, pivotal for both individual and organizational success. Decision-making involves gathering pertinent information, generating alternatives, and selecting the most suitable solution from among them (Burcu, 2018). Complex situations often call for the utilization of multi-criteria selection models and normative selection models (BOZKURT ALTAN et al., 2018). The ability to make decisions may encompass a blend of intellectual, motivational, emotional, and experiential proficiencies (Bruine de Bruin et al., 2020). In various disciplines like economics and management, scholars have proposed rational decision-making models, focusing on the steps involved in decision-making. These models emphasize skills related to gathering information, generating and evaluating alternatives, and making choices (Küçükay, 2018).

Table 2

Components of Normative Decision-Making Process

Components	(SAMANCI et al., 2023)	(Kuzgun & Bacanli, 2006)	(Lunenburg, 2010)	This study
Plan		✓		
Making choice	✓	✓	✓	✓
Evaluating alternatives	✓	✓	✓	✓
Alternatives	✓	✓	✓	✓
Gathering information	✓	✓	✓	✓
Setting Goals	✓			
Problem		✓	✓	

Upon review of the normative modelling literature presented above, it becomes evident that while the components and evaluation of normative modelling are predominantly centred within the realms of economics, management, and medicine, its efficacy holds significant relevance in informing real-life decision-making processes. However, proponents of bounded rationality, as posited by Simon, present a contrasting perspective. They contend that emotions serve as the primary impetus behind the majority of consequential decisions in life (Lee & Kim, 2021).

To comprehensively grasp the necessity of decision-making skills, this study delves into three fundamental dimensions: knowledge, emotion, and skills. Knowledge predominantly denotes the cognitive aspect of decision-making, encompassing the adept

acquisition, integration, evaluation, and application of information to facilitate informed decision-making processes. Emotion primarily concerns the proficiency in perceiving, comprehending, managing, and leveraging one's own and others' emotions within decision-making contexts to facilitate more apt decision outcomes. Skills primarily encompass abilities derived from the systematic execution of rational decision-making steps, including the adeptness in problem perception, information gathering, alternative generation, alternative evaluation, decision-making, and outcome assessment.

Tourism Education

Tourism education, emerging as a distinct discipline in the late 19th to early 20th centuries, has evolved from imparting geography, history, and culture to a specialized field. Today, it emphasizes internationality, diversity, and sustainability. Educational institutions are undergoing reforms, shifting towards interactive, practical, and personalized learning methods (Benckendorff & Zehrer, 2017). Undergraduate tourism education aims to cultivate talents proficient in tourism management, hotel management, marketing, and planning. Combining theory with practice, it equips students with comprehensive skills to tackle global tourism challenges, fostering international perspectives and innovative thinking. Graduates can pursue careers in tourism planning, consulting, hospitality, and government tourism departments, contributing to management, marketing, planning, and research endeavours. Undergraduate tourism education plays a vital role in fostering career development, industry talent, economic growth, cultural exchange, service enhancement, sustainability, technological innovation, and digital transformation, facilitating student growth while driving global prosperity and sustainable tourism development (Cho & Kang, 2006).

Research Methodology

Phase I: Needs Assessment for Virtual Tourism-Integrated Experiential Based-Learning Model and Decision-Making Skills

During this preliminary stage, researchers are concentrating on evaluating the necessity for crafting an experiential learning model interwoven with tourism studies to augment decision-making proficiencies. The principal aim is to scrutinize and ascertain the precedence of these foundational imperatives. This endeavour entails probing into the current state and anticipated advancements in students' decision-making competencies, alongside the developmental trajectory and envisaged parameters concerning the fusion of virtual tourism and experiential learning. The delineation of operational intricacies pertaining to the initial phase is outlined below:

Research Instruments and Data Analysis

To tailor learning needs to the specific requirements of the target audience, researchers devised a comprehensive needs assessment tool. This instrument aims to appraise the requisites of undergraduate tourism students concerning decision-making skills and the integration of tourism with experiential learning. The assessment encompasses two primary sections: respondent information statistics and a dual-response estimation scale. The respondent

information statistics segment gathers pertinent background data from the participants. Meanwhile, the dual-response estimation scale employs a 5-level Likert scale, where participants assess both "existing conditions" and "anticipated needs." Researchers evaluate and scrutinize these foundational needs by juxtaposing the current state of student decision-making skills and virtual tourism experiential learning against their projected conditions.

Questionnaires were administered via the "Questionnaire Star" WeChat official account application and were constructed utilizing a Likert 5-level scale. The "Modified Priority Needs Index" (PNI Modified), as proposed by Deechai et al. (2019), was employed for computation purposes, employing the formula $PNI \text{ (Modified)} = (E - D) / D$, where E denotes the expected condition score and D represents the current condition score.

The questionnaire survey encompasses inquiries concerning decision-making skills and the integration of virtual tourism with experiential learning, totalling 29 entries. Within this survey, the section addressing decision-making skills comprises 19 items, subdivided into 6 items focusing on knowledge, 6 items on emotion, and 7 items pertaining to skills. Concurrently, the segment involving the amalgamation of virtual tourism with experiential learning comprises 10 items, comprising 3 items delineating educational benefits, 4 items concerning environment and support, and 3 items relating to interaction and support. The IOC methodology was employed, with values ranging from 0.67 to 1.00 indicating the coherence of the questions. To ascertain questions demonstrating consistency, the IOC approach was utilized, where values within the range of 0.67 to 1.00 signify the comprehensiveness of the inquiries. Data analysis entails employing descriptive statistical techniques, encompassing the computation of frequency, percentage, mean, and standard deviation, with the objective of ensuring the accuracy and reliability of the needs assessment instrument. The IOC methodology engages the expertise of three educational technology specialists, one higher education authority, and one tourism pedagogy expert. Collaboratively, they assess and offer feedback on content consistency. This stringent evaluation process serves to ensure that the needs assessment instrument effectively captures vital information pertinent to the development of a model integrating virtual tourism and experiential learning.

This research primarily focuses on undergraduate students specializing in tourism and conducts surveys across various universities in China. The participants consist of tourism students from Shanxi Tourism College, Shanxi Normal University, Taiyuan Normal University, Shanxi Engineering Vocational and Technical College, and Xinzhou Teachers College in China, selected through random sampling. A total of 572 students nationwide voluntarily participated in a questionnaire survey regarding their learning needs in tourism and the enhancement of decision-making skills. After excluding 71 students who completed the questionnaire in less than one minute, the priority indices of learning needs assessment from 501 students were selected for ranking to formulate the model.

PHASE II Developing A Virtual Tourism Integrated Experiential-Based Learning Model

Incorporating insights gleaned from the needs assessment, researchers have utilized this data to formulate a model geared towards augmenting decision-making skills among undergraduate tourism students, incorporating a fusion of virtual tourism and experiential learning. The construction of this model encompasses five distinct phases: goal establishment, experiential immersion, reflective analysis, practical application, and

performance evaluation. The ensuing section offers a thorough exposition of this design framework, delineating five coherent and meticulously defined stages.



Figure1: Integrating Virtual Tourism with Experiential Learning.

Table3

The Process of Developing the Vtel Model

Processes	Description
Objectives	Students and experts from the tourism industry together determine learning objectives to ensure the relevance, practicality, and challenge of the learning content. The objectives should encompass multiple aspects, including theoretical knowledge, decision-making skills, and the development of emotional intelligence.
Experience	Design enriching virtual tourism experiences, guided by experts and simulating real-world scenarios, enabling students to apply decision-making theoretical knowledge to actual work challenges.
Reflection	Design reflective activities to encourage students to review and analyse their decision-making process after each experience, identifying strengths and potential areas for improvement. Utilize tools such as discussion boards and video conferencing to facilitate in-depth communication and reflection among students, peers, and teachers.
Action	Building on the virtual tourism experience, provide more hands-on opportunities such as project work and case studies to enable students to apply theoretical knowledge to solving real-world problems. Increase the chance for students to practice decision-making in complex and urgent situations through role-playing and team collaboration tasks.
Assessment	Adopt a diversified assessment approach, including self-assessment, peer assessment, and expert evaluation, to comprehensively evaluate student decision-making skills and learning outcomes. Establish regular assessment and feedback sessions to help students promptly understand their progress and deficiencies, clarifying the direction for their next learning steps.

Research Instruments and Data Analysis

For the evaluation of the curriculum integrating virtual tourism with experiential learning, a panel comprising five experts was convened. Their assessment encompassed the examination of mean values, classification of opinion levels, and computation of standard deviations. Mean values were interpreted across five distinct levels, spanning from the highest quality tier termed "Highly Suitable" (averaging between 4.50 and 5.00) to the lowest quality tier termed "Needs Improvement" (averaging between 1.00 and 1.49). To adhere to the quality acceptance criteria, each assessed facet must attain an average rating of 3.50 or above, denoting a requisite high level of quality for each aspect.

To foster consensus across technology, academia, and industry, a discussion was convened with five experts. They comprise two specialists in educational technology, one in higher education, and two in tourism education. All possess doctoral degrees and possess over eight years of professional experience in their respective domains. The panel consists of three educational technology experts, one curriculum and teaching specialist, and one tourism education professional.

Results

Needs Assessment

The PNI modified gauges the immediacy for enhancements in specific domains by juxtaposing the disparity between the present and desired conditions. In this investigation, data from 501 students were utilized to pinpoint the principal developmental requisites in integrating virtual tourism with experiential learning models. Through the comparison of PNI modified averages across facets such as knowledge (0.322), emotion (0.265), and skills (0.213) within decision-making competencies, alongside educational advantages (0.317) of experiential learning, environmental and support (0.276), and interaction and support (0.291), a notable divergence emerges between students' current status and their aspired conditions in these realms. Notably, the most pressing needs are underscored in decision-making knowledge (PNI modified of 0.322) and the educational benefits derived from experiential learning (PNI modified of 0.317).

The PNI modified assesses the imperative for enhancements in specific domains by contrasting the disparity between the current and desired conditions. This study utilized surveys from 501 students to delineate the primary developmental requisites in integrating virtual tourism with experiential learning models. Comparative analysis of the PNI modified averages across facets such as knowledge (0.322), emotion (0.265), and skills (0.213) within decision-making competencies, alongside the educational benefits (0.317) of experiential learning, environmental and support (0.276), and interaction and support (0.291), underscores a notable gap between students' existing state and their envisioned conditions in these realms. Notably, the most pressing needs are observed in decision-making knowledge (PNI modified of 0.322) and the educational advantages associated with experiential learning (PNI modified of 0.317).

Table4*The PNI Modification and Development Priority of Integrating Virtual Tourism with Experiential Learning*

Assessment items	Status		Expectation		Priority	
	Mean	S. D	Mean	S. D	PNI modified	Priority
1Decision-Making Skills Knowledge						
1. Identify and exploit decision-related learning opportunities to effectively respond to new challenges.	3.37	1.00	4.77	0.95	0.415	2
2. In the face of complex problems, be able to critically identify key knowledge and information involved in the decision-making process.	3.44	0.97	4.61	0.93	0.341	3
3. Seek expert advice to solve complex decision-making problems.	3.22	1.08	4.69	0.72	0.455	1
4. I understand the cognitive biases I may encounter during decision-making and try to reduce their impact on my decisions.	3.48	0.95	4.55	0.93	0.307	4
5. Reflect on past experiences to improve decision-making.	3.67	0.93	4.25	0.92	0.158	6
6. In team decision-making, the knowledge I retain affects achieving better results.	3.45	0.98	4.34	0.96	0.257	5
average score	3.43	0.98	4.53	0.90	0.322	
Emotion						
7. In the face of new challenges, I maintain confidence in decision-making.	3.64	0.92	4.25	0.92	0.324	2
8. Balance emotions and avoid irrational decisions.	3.70	0.89	4.23	0.92	0.307	6
9. I can remain rational even under pressure.	3.60	0.92	4.50	0.92	0.346	1
10. When faced with emotional conflicts, stay calm and seek solutions.	3.71	0.88	4.31	0.89	0.313	3
11. Effectively guide decision-making in a positive team atmosphere.	3.68	0.91	4.20	0.93	0.310	4
12. Combine positive emotions with objective analysis and apply them in decision-making.	3.75	0.89	4.24	0.88	0.304	5
average score	3.68	0.90	4.28	0.91	0.265	
Skill						
13. Actively collect information related to decision-making to deal with new challenges.	3.64	0.89	4.38	0.90	0.206	3
14. Ability to make decisions quickly and effectively in complex emergencies.	3.56	0.92	4.44	0.91	0.250	1

15. Develop long-term plans and be able to systematically analyse decision-making information.	3.58	0.89	4.36	0.92	0.220	4
16. Evaluate different options in decision-making.	3.60	0.91	4.48	0.88	0.246	2
17. Achieve effective communication in team decision-making.	3.67	0.88	4.32	0.89	0.178	4
18. Balance long-term and short-term goals in the decision-making process.	3.62	0.89	4.33	0.90	0.196	5
19. Demonstrate leadership skills in multi-party coordination and decision-making.	3.57	0.92	4.29	0.94	0.200	6
average score	3.60	0.90	4.37	0.90	0.213	
Tourism Learning						
Educational Benefits						
20. Experiential-based learning is crucial for theoretical knowledge and practical application skills in the field of tourism.	3.68	0.91	4.85	0.90	0.317	2
21. Experiential learning is very important for the decision-making skills of tourism students.	3.64	0.93	4.80	0.91	0.318	1
21. Experiential learning is very helpful in enhancing the interest in studying and improving grades in the field of tourism.	3.66	0.93	4.82	0.93	0.316	3
Average score	3.66	0.92	4.82	0.91	0.317	
Environment and Support						
22. Setting clear learning objectives in experiential learning is important for learning performance.	3.66	0.89	4.81	0.87	0.316	2
23. Navigation and user-friendly interfaces are crucial for professional learning in tourism studies.	3.72	0.88	4.74	0.89	0.274	3
24. Virtual tracking of learning outcomes.	3.23	0.91	3.87	0.89	0.198	4
25. Immersive experience is crucial to the effectiveness of tourism learning.	3.69	0.93	4.85	0.89	0.317	1
Average score	3.57	0.90	4.46	0.88	0.276	
Interaction and Support						
27. The communication from the experts helped me to learn effectively.	3.25	0.90	4.48	0.89	0.378	1
28. Peer discussion and feedback aid learning.	3.54	0.92	4.94	0.90	0.320	2
29 Teacher guidance is crucial in tourism learning.	3.99	0.91	4.70	0.89	0.177	3
Average Score	3.59	0.91	4.64	0.89	0.291	
Total	3.58	0.91	4.48	0.89	0.28	

Decision-Making Skills

Concerning knowledge, a notable disparity is evident between students' existing competencies and their aspirations regarding aspects such as recognizing and capitalizing on decision-making learning opportunities, critically evaluating crucial knowledge and information amidst complex scenarios, and seeking expert counsel. Particularly, the paramount priority for improvement lies in the capability to solicit expert guidance for intricate decision-making dilemmas, as indicated by the highest priority need index (PNI modified at 0.455).

On an emotional level, students exhibit a deficiency in maintaining confidence when confronted with novel challenges and in managing emotions to avert irrational decisions. The most pronounced area requiring improvement is the aptitude to maintain rationality under duress (PNI modified at 0.346), underscoring the critical necessity to fortify decision-making proficiency amidst stressful circumstances.

Regarding skills, a conspicuous incongruity exists between students' current status and expectations concerning swift and effective decision-making and the assessment of diverse options. The capability to make prompt and efficient decisions in intricate and urgent contexts emerges as the most crucial skill necessitating enhancement (PNI modified at 0.250).

Tourism Learning

Educational Benefits: The PNI modified reflects a relatively high value (approximately 0.317) for the significance of experiential learning in fostering both theoretical knowledge and practical application skills within the tourism sector. This underscores a substantial opportunity for enhancing the educational advantages derived from experiential learning.

Environment and Support: While the average PNI modified value for environment and support is relatively modest, immersive experiences emerge as the most crucial area necessitating improvement (PNI modified at 0.317) to augment the efficacy of tourism education. This underscores the pivotal role of optimizing the learning environment and providing adequate support in enhancing tourism learning outcomes.

Interaction and Support: Within the domain of interaction and support, assistance in communication from experts (PNI modified at 0.378) exhibits a relatively high priority for enhancement, underscoring the significance of bolstering learning interaction and support mechanisms to enrich the tourism learning experience.

Overall, there exists an urgent imperative for students to fortify their knowledge pertaining to decision-making. Within the realm of VTEL, the clarification of learning objectives, provision of expert guidance, and facilitation of peer feedback are crucial for educational efficacy. Moreover, the significance of immersive experiences in enhancing learning outcomes cannot be overstated. Thus, in designing the VTEL model, emphasis should be placed on reinforcing expert guidance, elucidating learning objectives, fostering immersive learning environments, and promoting peer discussions and pre-assessments to cater to students' learning needs and enhance learning outcomes.

Table 5

Evaluation of a Virtual Tourism-Based Experiential Learning Model

Assessment Items	Expert Evaluation		
	\bar{X}	S.D.	Level
Learning Outcomes			
1. The VTEL model effectively integrates experiential-based learning principles.	4.80	0.45	Strongly Agree
2. The VTEL model enhances the effectiveness of learner decision-making skills.	4.00	0.71	Agree
3. The VTEL model enhances the effectiveness of learner academic performance.	4.60	0.55	Strongly Agree
4. The TEL model enhances the effectiveness of learners theoretical knowledge and professional skills	4.60	0.55	Strongly Agree
5. The effectiveness of virtual tourism integration in experiential learning.	4.40	0.89	Agree
6. The importance of clear learning objectives for the effectiveness of the VTEL model.	4.60	0.55	Strongly Agree
7. Navigation and user interfaces for guidance and support in the VTEL model.	4.20	0.45	Agree
8. The realism and immersion of virtual tourism in the VTEL model.	4.60	0.5	Strongly Agree
9. The effectiveness of expert guidance and assessment in the VTEL model.	5.00	0	Strongly Agree
10. The interactivity of peer discussion and assessment in the VTEL model.	4.4	0.55	Agree
11. The effectiveness of teacher organization and feedback in the VTEL model.	4.8	0.45	Strongly Agree
Total Average	4.54	0.51	Strongly Agree

The expert evaluation of the VTEL model encompasses three primary dimensions: Learning Outcomes, Environment and Support, and Interaction.

In assessing Learning Outcomes, experts observed the VTEL model's proficiency in integrating experiential-based learning principles, enhancing learners' decision-making skills, improving academic performance, and bolstering theoretical knowledge and professional competencies. The model received average scores ranging from 4.00 to 4.80 across these aspects, underscoring its effectiveness in these domains.

Regarding Environment and Support, experts evaluated the efficacy of virtual tourism integration in experiential learning, the clarity of learning objectives, the functionality of navigation and user interfaces, and the realism and immersion of virtual tourism. Average scores spanning from 4.20 to 4.60 indicate the model's commendable performance in furnishing the requisite learning environment and support.

In terms of Interaction, experts lauded the effectiveness of expert guidance and

assessment, the interactivity of peer discussion and assessment, and the efficacy of teacher organization and feedback within the VTEL model. Average scores between 4.40 and 4.50 underscore the model's strengths in fostering interaction and support.

Overall, the VTEL model garnered a total average score of 4.54 with a standard deviation of 0.51, indicative of experts' unanimous consensus regarding its high appropriateness across all evaluated facets. This consistent evaluation suggests the VTEL model's remarkable effectiveness across various dimensions. The relatively minimal standard deviation further signifies a high level of agreement among experts, with minimal variance in their assessments.

Discussion

Through rigorous statistical analysis, this study has delineated the needs of tourism students encompassing knowledge, emotion, skills, and VTEL, underscoring the significance of soliciting expert guidance to augment decision-making competencies. Students not only recognize the pivotal role of professional knowledge in tourism management education but also express a keen desire to acquire industry insights and problem-solving strategies through engagement with experts (Bruggeman et al., 2021; Kolb & Kolb, 2005). Consequently, educational initiatives should facilitate communication channels between students and tourism industry experts, such as establishing expert groups on platforms. This enables students to enrich the practicality of instructional content, enhance career preparedness, and refine decision-making prowess in intricate scenarios through communication software or expert groups (Coan & Allen, 2007).

Concerning emotional proficiency, students' imperative to sustain decision-making confidence and enact rational choices under pressure underscores the significance of fostering emotional intelligence (Parker et al., 2007). Through utilization of simulation environments and role-playing scenarios, students can engage in decision-making practice amid challenges and pressures within a secure milieu, thereby acquiring skills to regulate emotions and manage stress, consequently augmenting their adaptability in real-world contexts.

The analysis of skill requirements underscores the significance of expeditiously rendering effective decisions in intricate emergencies. Hence, in the development of a virtual tourism platform, emphasis must be placed on integrating real-time interaction and collaborative functionalities. This facilitates students' opportunities to engage in practicing and refining their decision-making capabilities within a simulated real-world milieu (Tyler, 2013).

Within the realm of VTEL, the accentuation on real-time interaction and peer feedback further underscores the pivotal role of interactivity and community support in enhancing learning outcomes. This underscores the necessity for prioritizing the enhancement of user experience in the development of virtual platforms, ensuring seamless communication, sharing, and reception of feedback by students. Moreover, the provision of accessible resources and the crafting of immersive experiences are pivotal for augmenting students' learning motivation and instructional efficacy. Hence, educational initiatives should integrate top-tier learning resources to foster a content-rich learning milieu for students. By adopting these methodologies, educators can more adeptly address the requisites of tourism students, thereby establishing a robust foundation for their prospective achievements in the tourism sector.

Conclusion

This research conducts a thorough needs assessment to develop an experiential learning model integrating virtual tourism, aiming to enhance decision-making skills among undergraduate tourism students in China. Surveying 501 students from five universities via an online questionnaire, the study unveils specific needs in decision-making skills and virtual tourism learning. The findings highlight a crucial demand for knowledge acquisition in decision-making, especially valuing expert opinions in complex scenarios, emphasizing the necessity of professional guidance. Moreover, students express a keen interest in applying decision-making skills in real-world contexts, underscoring the need for increased experiential learning opportunities. Prioritizing skills for quick and effective decision-making in emergencies, evaluating options, and seeking relevant information suggests the necessity for a comprehensive decision-making training approach encompassing cognitive, skill-based, and emotional aspects. Additionally, in virtual tourism learning, the significance of real-time interaction, peer feedback, accessible resources, and immersive experiences is particularly emphasized, indicating the imperative for an interactive and engaging educational environment.

Based on the needs assessment, integrating virtual tourism into experiential learning models holds promise for enhancing tourism students' decision-making skills, better equipping them for the challenges of the industry. Educators can utilize these findings to develop more tailored and engaging teaching approaches. This research offers insights for educational practice and technological innovation to elevate learning outcomes and produce graduates who are more adaptable and competent. While the study's geographic focus may limit generalizability, its implications for tourism education are substantial, promising closer alignment with industry.

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