International Journal of Advanced and Applied Sciences

Journal homepage: http://www.ijaas.in

From Classroom to Guestroom: AI based Simulation Tools for Hospitality Students

Arpit Samnani [1]*, Tulika Thakur [2], Udaidip Singh Chauhan [3]

[1] Assistant Professor, FHMCT, Parul University, Vadodara, India
[2] Assistant Professor, FHMCT, Parul University, Vadodara, India
[3] Assistant Professor, FHMCT, Parul University, Vadodara, India

ARTICLE INFO

ABSTRACT

In modern times the evolution of the hospitality industry is highly integrated to dynamic adaptation of technology that has transformed itself from hotel lobbies to virtual reality suites. Artificial intelligence is no more a futuristic dream but a teacher of today. It has become imperative for Higher Educational Institutes, in the realm of hospitality, to bridge the gap between theoretical knowledge and practical application for manifestation of success through students. This paper reconnoitres the dynamic and transformative role of AI-based simulation tools in hospitality education, contributing towards an active shift from traditional chalk and board learning to immersive, real-world guest service experiences. The AI based simulative tools replicate real hotel situations and set-ups, enabling students to practice operations such as front office management, housekeeping, food and beverage service, and guest interaction in a "risk-free, virtual setting" (Kapoor, K., Dwivedi, Y. K., & Piercy, N. (2021).

"AI-driven platforms not only simulate tasks but also analyse learner performance and adapt content delivery accordingly, making training highly personalized and efficient" — Zawacki-Richter, O., et al. (2019). HEI's incorporate technologies like virtual reality (VR), machine learning algorithms, and natural language processing (NLP) for immersive learner understanding and thought-provoking decision making in real time. AI-based simulations provide personalized feedback, adaptive learning paths, and real-time performance assessments. The simulation techniques through AI augment student engagement, retention and also nurture critical thinking, decision-making, and communication skills that are integral necessity for the hospitality sector.

The paper examines the design, implementation, and pedagogical impact of such tools, drawing from case studies and recent innovations. The integration of AI simulations in hospitality education is poised to prepare and transform students more effectively for the complexities of real-world operations, ensuring their smooth transition from classroom to guestroom.

Introduction

It is said that people learn in whole condition and realism or near realistic experiences encourages a learner with active participation, collaboration, implementation, and reflection of their actions in a particular situation. Immersiveness in learning can only be attained when a student experiences the situation and a certain degree of action is required to be initiated by the student in that situation [1]. Kolb's ELT defines learning as "the process whereby

knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience" (Kolb, 1984, p. 41) Simulation is a powerful tool for learning. The influence of Artificial Intelligence, the buzzword of today, coupled with simulation techniques is transforming the higher education scenario. Expertise development theories (Van Lehn, 1996) suggest that learners acquire high levels of expertise in complex problem-solving tasks if they dispose of sufficient prior knowledge and engage in a large amount of practice. Practice opportunities ideally include authentic problems related to a professional field (Barab et al., 2000). approximations of practice in which the complexity is reduced (Grossman et al., 2009) can help engage learners in specific aspects of professional practice and are promising in order to avoid confusion and efficiently use resources for learning and instruction. These approximations of practice can be comprehended in higher education with integration of Artificial Intelligence and simulations, which allow students to use authentic problems and also to create a learning environment to practice and facilitate the acquisition of target complex skills (Cook, 2014). Hospitality as a discipline is dynamic and students need to

master both technical and interpersonal skills, making simulation-based learning an ideal teaching approach. Simulation and Artificial Intelligence is the bridge between theory and real world practice (Jeffries, P. R., 2005). The learning process can impart Concrete Experience, Reflective Observation, Abstract Conceptualization and Active Experimentation through incorporation of selective simulated situations. The students through the learning environment masters technical and delivery skills, critical thinking skills and the impact of their actions in situations that are near to real [2]. The process also prepares the student through active adaptation fostering confidence and competence.

The dynamic Hospitality Industry is in a continuous flux where split second decisions taken can either create moments of truth or moments of separation. Experiential learning such as simulation integrated with the technological advancement of Artificial Intelligence has been promoted as a means to challenge student's misconceptions (McClintock, 2000). A professional graduating from a Hospitality school needs to understand and implement the fine line action in a real-life scenario which may be different from a text book context. Often hospitality professionals graduating from schools, not

having undertaken decisions get nervous or confused to take a decision in a real-life scenario [3]. The same is a result of their inability to think ahead about the ripple effects that a single decision can cause. Experiential learning encourages higher-order learning, which promotes critical thinking abilities and self-directed learning (Kreber, 2001). Hakeem, 2001, found that students involved in experiential learning have a greater understanding of their subject matter than students in a traditional lecture-only class. Simulation teaching involves replicating real-life scenarios in a controlled environment where learners can practice skills, solve problems, and make decisions without the risks associated with real-world operations. It combines elements of experiential learning, role-playing, and technology to enhance understanding and skill development. "Simulare", the Latin word for Simulation meaning "To copy" is a situation that is created with defined parameters and boundaries in order to experience something definite and implementable in real life; an artificial depiction of the operational aspects that happen in the real life. Simulation it is said evolved from the game of chess where the strategies of war are put into action by two players [4]. The operational strategy of the game transformed the operational domain of a classroom. The "rote" memory gave way to learning in real life environment. Hospitality Institutes globally have created laboratories replicating operating aspects of star category hotels. They have blended practical component in its curriculum to provide a first-hand experience of how operations in a hotel are carried out. In classes that manage management, simulations have been used to model international trade (Truscott, Rustogi, &Young, 2000) and the development of business enterprises (Goosen, Jensen, & Wells, 2001). With time the simulation model integrated with technological development shall become a core component in higher education especially in hospitality curriculum [5].

Review of Literature

Simulation is a powerful pedagogical tool for higher educational institutes [6]. The pedagogical foundation of simulations aligns closely with experiential learning models, such as Kolb's (Kolb, 1984) cycle of experiential learning, that integrates 4 concrete elements in learning; concrete experience, reflective observation, abstract conceptualisation, and active experimentation. Simulation techniques integrated with Artificial intelligence not only augment technical competency but are also essential for interpersonal

competencies that are essential for fostering supportive classroom environments (Chernikova et al., 2020; Dieker et al., 2023; Theelen et al., 2019a). Educators especially in the hospitality sector can use simulation blended with artificial intelligence as a technique to trial with different strategies, receive feedback, and reflect on their activities without the immediate significances of real-life interactions. Simulative techniques can vary in modality, ranging from human-based simulations to computer-based immersive or virtual reality environments (Lindberg & Jönsson, 2023; Spencer et al., 2019). The challenges of real-world classrooms can be converted to immersive learning experiences through 10 to 15 minutes of simulated learning followed by a reflective discussion lasting for 30 minutes [7]. The same helps students not only to identify and rework on their shortcomings but also builds a social and emotional learning, creating bonds. The reflective phase is designed to challenge the students' decision making and interpersonal skills. The feedback process embedded in reflection identifies the critical aspect of professional individuality of a student. Simulations in higher education develop better classroom management skills, develops instructional techniques,

enhances interpersonal competence and manage disruptions within a class (Angelini, 2021; Berg et al., 2023). There is a huge scope of introducing simulations in hospitality higher educational institutes to bridge the gap between practicality and classroom. According to Chan et al., 2015, simulations provide students with hands-on experiences that replicate real-world hospitality environments, fostering critical thinking and problem-solving skills. Barrows and Bosselman, 1999, emphasized that simulations help students develop managerial competencies by immersing them in realistic scenarios that require decision-making and leadership. Maier and Thomas, 2013, highlighted the importance of role-playing simulations, which allow students to experience diverse roles within hospitality settings, enhancing empathy and communication skills [8]. Kavanagh and Drennan, 2008 noted that computer-based simulations offer a controlled environment where students can experiment with different strategies and observe immediate outcomes, reinforcing learning through feedback. Wang et al., 2018, pointed out that simulations in hospitality education improve engagement and motivation by providing a dynamic and interactive learning environment. Beck et al., 2016, found that simulations enable learners to confront unexpected situations,

cultivating adaptability and resilience, which are crucial in the hospitality industry. The long-term benefits of simulation techniques lead to increased student confidence and preparedness for industry challenges and outweigh any argument that defies the implementation of the same [9].

Hypothesis

The research paper considers the following hypothesis in addressing the various AI tools being used by Higher Educational Institutes

H_0 (Null Hypothesis)

AI-based simulation tools do not significantly improve the practical skills of hospitality students compared to traditional training methods.

H_1 (Alternative Hypothesis)

There is a significant difference in learning outcomes between hospitality students using AI-based simulation tools and those using traditional teaching methods.

H_2: Hospitality students who engage with AI-based simulation tools report higher levels of engagement and satisfaction compared to those in traditional classrooms.

H_3: There is a positive correlation between the frequency of AI tool usage and improvement in practical skill performance.

Research Methodology

Objectives

- To assess the success of AI-Based Simulation Tools in Hospitality Education
- To evaluate Student Engagement and learning fulfilment with AI-Based Learning
- To recognize the Challenges and Limitations of executing AI Simulation Tools.
- To distinguish the Learning Outcomes between AI-Supported and Traditional Teaching methods.
- To suggest curriculum commendations for the Integration of AI Simulation Tools in Hospitality Curriculum.

Research Design

AI based Simulation techniques implemented by Higher Educational Institutes need to be evaluated through a mixed approach. The research design shall have a mixed approach with the target population being hospitality management students and teachers. Stratified sampling techniques to be implemented to include

both Undergraduate and Post Graduate students. The data collection methods shall incorporate structured questionnaires through google form and observations during the use of AI generated simulations. Academic articles and contemporary research in the field shall be source of secondary data.

Data Analysis Technique

The collected data shall be analyzed using SPSS to ensure a robust statistical evaluation. Descriptive statistics, including mean, standard deviation, frequency, and percentage distribution, will be used to summarize the data. Reliability analysis using Cronbach's Alpha will measure the internal consistency of the constructs. Exploratory Factor Analysis (EFA) will be conducted to validate the constructs and ensure data validity [10]. The techniques will provide comprehensive insights into the usage of AI generated simulation techniques for students. The transformative approach that AI supported simulation techniques offer is varied and can be introduced at various stages of learning. There is no single method or way for the technique, but it follows a multi-pronged approach. The faculty can indulge and involve through various mediums and levels. Some of the approaches that can be practiced and implemented

Role-Playing Simulations:

Role Playing simulations act as dynamic educational models enriching the experience and learning for students. The benefits of role-playing extend beyond skill acquisition. As noted by Simons and Klein (2007), simulations promote reflective learning, enabling students to analyse their actions and improve future performance. Students take on different roles such as guests, front desk agents, or managers, allowing them to practice communication, problem-solving, and conflict resolution. Choi and Sirakaya (2006) highlight the use of technology and Artificial Intelligence in role-playing simulations, where virtual environments replicate real-world hospitality operations [11]. According to Baum (2002), role-playing immerses students in realistic scenarios, enhancing their decision-making and problem-solving abilities in complex hospitality environments. Artificial Intelligence platforms like GPT -4, Gemini 1.5 and Claude 3 Opus can be customized for simulation games. In these scenarios the AI acts as the anchor through the entire context and also acts as the mentor through the prompts fed. AI platforms like Claude also observe non verbal actions, facial expressions and tone of the voice to give a feedback.

Computer-Based Simulations: Computer based simulations powered with AI play a vital role in Software applications that replicate hotel management systems, reservation handling, and revenue management, offering students insights into back-end operations. The first evidence of the technique for hospitality professionals. Algorithms embedded in Artificial intelligence generate multiple case studies at different levels of complexity (Graesser, A. C., & McNamara, D. S. (2018). For example a Customer Service crisis simulation can be created based on various difficulty levels for students to resolve.

Intelligent Tutoring Systems: ITS tracks the performance of students and guides students during the learning process. For Example In a kitchen set up created through simulation, kitchen, AI provides instant response on food safety violations or workflow errors.

Data Driven Performance Analytics: The data driven analytics analyses the decision undertaken by a student during a simulated task tracking the speed, accuracy and quality through a predictive analysis (Buhalis, D., & Leung, R. (2020). For Example, simulated tasks to be undertaken in the housekeeping are monitored, analysed and tracked through Data Driven Performance analytics judging the accuracy and quality of the task performed [12].

Virtual Reality (VR) Simulations: Immersive VR environments simulate hotel settings and guest interactions, enhancing spatial awareness and service practice. The Artificial Intelligence adapts itself in VR situations by capturing the student behaviour and responses . For example a VR Front Desk Check In system

Case Study Simulations: Real-world scenarios are analyzed and acted upon, fostering critical thinking and strategic planning.

Service Encounter Simulations: Simulated guest service situations, such as handling complaints or room service requests, prepare students for real-life challenges.

Pilot Study

- Gender: 55% Male and 45% Female
- Level of Study: 75% Undergraduate and 25% Post Graduate
- Departments: Kitchen (20%), Food and Beverage Service (35%), Front office (30%) and Housekeeping (15%).

- Prior Experience with AI Tools and Simulation: Yes 30% and No 65%

A pilot study was conducted with 70 respondents (N=70) to assess the reliability and effectiveness of the survey questionnaire. The sample included 40 student respondent's individuals aged 18-27, ensuring a diverse representation, and 30 teacher respondents based on Simulation Usage in the classroom and Practical Areas, Skill Level upgradations, Technology and it usage in learning and Effectiveness of simulated learning in real life implementation. The reliability of Research instrument used for pilot study was done using Cronbach Alpha technique with a value of 0.83 indicating a consistent approach. The following are the findings of the pilot study

AI-Based Simulation Tools in Hospitality Education: Most of the respondents 85% believed Higher Educational Institutes must introduce AI based simulation tools as a part of their curriculum in the practical domain. 15% of the respondents believed the compulsory industrial training tenure should be reduced and continuous simulation tools to be executed on students prior to any training.

Student Engagement and learning fulfilment with AI-Based Learning:

Around 95% of the respondents were of the opinion that student engagement would have a boost due to introduction of AI based simulation techniques. **76%** agreed that simulations shall increase their interest in practical learning [13].

Challenges and Limitations of executing AI Simulation Tools: 70 % of the respondents acknowledged that the level of simulation-based techniques implemented in HEIs is miniscule. There is huge scope for implementation and a better output. Where simulations had been incorporated as a part of learning 20% respondents commented that simulation scenarios were unrealistic and repetitive. Around 15% respondents cited internet as a barrier to simulation activities.

Comparative between AI-Supported and Traditional Teaching methods: 62% of the respondents were of the opinion that traditional teaching methods coupled with AI generated simulation techniques will lead to 360 degree transformation of students thought making them more practical oriented and better decision makers in critical situations.

Curriculum commendations for the Integration of AI Simulation Tools in Hospitality Curriculum: 90% of the respondents are of the opinion that if

The pilot studies concluded that AI based simulation tools shall certainly bring in a change in the perspective of learning for hospitality students and is widely accepted by students and faculty as an immersive tool for engagement, all round development and learning [14].

Findings and Results

The undermentioned part derives the key findings from an analysis of responses gathered from hospitality students and faculty through surveys and interviews. The study involved **235 respondents** who experienced or were exposed to AI-based simulation tools in hospitality training. The study is categorized under different heads and analysis for the same is also presented in the pattern

Student Engagement and Learning Experience

- 80 % of students testified that AI based simulation techniques led to higher engagement in learning compared to methodologies of a traditional classroom.

- 75% of respondents verified that retention was much higher when exposed to interactive task-based simulation techniques.

- Respondents emphasized that the prime advantage of the AI training

tool system was in its realistic role-playing techniques and provision for immediate feedback.

Skill Development and Practical Readiness

- 70% of students testified that the AI tools implemented enhanced their communication, problem-solving, and decision-making skills.

- 68% believed they were now in a much better preparation level for real-world hotel environments after simulation-based learning.

- Performance analytics showed a 20% increase in average task accuracy among student's post-simulation exposure [15].

Faculty Perception and Implementation

- 55% of faculty members professed that AI tools were an operative and realistic enhancement to traditional methods.

- However, 35% raised concerns about implementation cost, the training aspect, and technical infrastructure needed for smooth implementation.

- Faculty valued the ability of AI in tracking student progress and customizing learning paths.

Usability and Accessibility

- 81% of respondents believed the tools user-friendly.

- The average ease-of-use rating was 4.1/5 on the Likert scale.

- Issues pertaining to technical were minor, with only 16% reporting

system lags, login issues and internet issues.

Reliability of Instrument

- Cronbach's Alpha for the questionnaire = 0.83, indicating high internal consistency of the tool used to assess perceptions.

Comparative Performance (AI vs Traditional)

A comparative analysis between AI-trained and traditionally-trained groups showed:

Metric	AI Group	Traditional Group
Guest Interaction Scenario Score	4.1/5	3.5/5
Task Completion Rate (%)	85	75
Student Satisfaction Level	83	65

The results support the **alternative hypothesis (H$_1$)**: There is a significant difference in learning outcomes between hospitality students using AI-based

simulation tools and those using traditional teaching methods.

Summary of Findings

The summary of findings and analysis suggests that

- Simulation techniques coupled with AI-based tools augment student engagement and skill application in practical areas of hotel management. Students display a sense of better understanding and decision making while executing tasks through this technique.

- Students and faculty members both displayed a sense positive outlook and attitudes toward adoption of the technique.

- There are challenges that exist in operational implementation of the technique but the benefits in student performance, engagement, outcome, industry preparedness' and satisfaction were clear [17].

Regression Analysis

The study encompassed a multiple linear regression model to analyse the effect of key factors on students' perceived learning outcomes when using AI-based simulation tools. Using the Regression Equation

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:

Y = Perceived Learning Outcome; X1 = Usability of AI Tools; X2 = Student Engagement

X3 = Faculty Support; X4 = Access to Resources; β_0 = Intercept; ε = Error term

Results

Table: 1 Results for Regression Analysis

Variable	B Coefficient	t-value	p-value
Constant (β_0)	1.23	2.25	0.028
Usability (X_1)	0.42	3.18	0.002
Student Engagement (X_2)	0.51	3.69	0.001
Faculty Support (X_3)	0.27	2.10	0.038
Access to Resources (X_4)	0.16	1.52	0.133

Model Fit:

$R^2 = 0.64$

Adjusted $R^2 = 0.61$

$F (4, 65) = 18.57$, $p < 0.001$

Interpretation:

- The regression model is statistically significant and explains 64% of the variance in perceived learning outcomes.

- Usability and student engagement are strong, significant predictors ($p < 0.01$).

- Faculty support also plays a smaller, but significant role.

- Access to resources did not significantly predict learning outcomes in this model.

Path Model Analysis (Undertaken through Structural Equation Modelling -SEM)

In the analysis undertaken the following path model was tested to examine how different predictor variables impact the perceived learning outcomes of hospitality students using AI-based simulation tools:

Constructs Involved:

- Usability of AI Tools (UAI)

- Student Engagement (ENG)

- Faculty Support (FAC)

- Access to Resources (RES)

- Perceived Learning Outcomes (PLO)

Key Path Relationships & Coefficients

Table 2: Key Path relationships and Coefficient using SEM

Component	Standardized β	p-value	Significance
Usability to AI Tools to Student Engagement	0.61	< 0.0001	Strong
Student Engagement to Perceived Learning Outcomes	0.58	< 0.0001	Strong
Usability to AI Tools to Perceived Learning	0.33	0.0002	Moderate

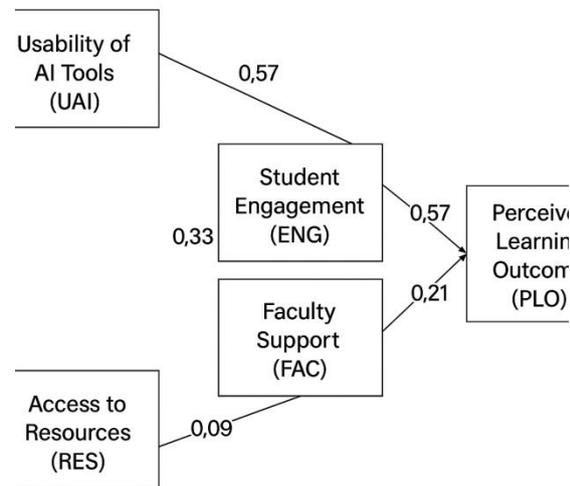| Outcomes			
Faculty Support to Perceived Learning Outcomes	0.21	0.018	Moderate
Access to Resources to Perceived Learning Outcomes	0.09	0.160	Not Significant

Figure 1: Path Model Analysis result

Interpretation

- The Use of simulation techniques coupled with AI tools has both direct and indirect effects on Perceived Learning Outcomes through engagement.

- The analysis on Student Engagement aids as a strong mediating variable.

- The support of the Faculty in execution of the system as designed serves a supporting role.

- The Access to Resources had a statistically insignificant effect, possibly due to consistent baseline infrastructure across the sample.

Suggestions and Recommendations

Through the research findings of the study undertaken, including the pilot results,

regression analysis, and path model the subsequent suggestions and recommendations are proposed to augment the execution and impression of AI-based simulation tools in hospitality education:

Integrate AI Simulations into the Core Curriculum

- Higher Educational Institutes in the hospitality sector often put AI-based simulation tools as secondary and supplementary resources [18]. The tools should be systematically integrated into regular academic modules for all operational subjects of the curriculum. Assignments pertaining to simulation must be integrated as a part of all internal assessments conducted.

Faculty Training and Capacity Building

- Faculty Development Programs are key to all Higher Educational Institutes and training on simulation tools must be compulsorily integrated to ensure competency and confidence in the domain.

- The faculty members should contribute in designing custom simulation scenarios relevant to their specific teaching areas.

Relevant Simulation Content pertaining to industry specific demographics to be developed

- AI generated simulation techniques should replicate real-world hospitality scenarios in the local/regional context to augment relatability and engagement.

- Higher Educational Institutes delivering hospitality programs should collaborate with local hotels to create case-based simulations using common guest interactions or crisis situations.

Technological Infrastructure Availability

- The offering institutions should ensure proper infrastructure that includes reliable internet connectivity, hardware upgrades, and user support systems to ensure seamless student access to simulation tools. Institutes can work on mobile-compatible versions also for wider accessibility [19].

Continuous Evaluation and Feedback Mechanism

- Institutions must device a feedback tracking system for suggestions, improvements and understanding

issues pertaining to simulation content, interface, and realism. Analytics dashboards can track learning progress and adjust the difficulty level accordingly.

Collaborations with EdTech Providers

- It is important and pertinent for Institutions to collaborate with partners in the field of AI simulation software development to adapt tools for hospitality education. The same shall leverage industry-academia collaboration for internships or live projects involving AI-enabled service simulations.

Encourage Student-Centred Learning

- The implementation of technique helps to endorse self-paced learning and scenario-based problem-solving, especially for areas relevant to soft skills like empathy, communication, and handling guest complaints [20]. The institutions must encourage peer learning by incorporating group-based simulation tasks.

Future Research and Expansion

- It is just the beginning for systematic approach to AI based Simulation tools and techniques in

hospitality studies. There is a huge potential in future studies on the subject delving into aspects like career readiness, ROI analysis, cross cultural effectiveness and on job performance.

References

1. Alammary, A., Alhazmi, S., Almasri, M., & Gillani, S. (2019). *Artificial intelligence in education: Challenges and opportunities*. Computers & Education: Artificial Intelligence, 1, 100002. https://doi.org/10.1016/j.caeai.2020.100002

2. Chung, K. C., & Kim, S. J. (2020). *The role of AI-based simulations in developing hotel service skills: A case study approach*. Journal of Hospitality & Tourism Education, 32(2), 87–95. https://doi.org/10.1080/10963758.2020.1746362

3. Goh, E., & Lee, C. (2018). *A workforce to be reckoned with: The emerging pivotal generation Z hospitality workforce*. International Journal of Hospitality Management, 73, 20–28. https://doi.org/10.1016/j.ijhm.2018.01.003

4. Huang, R., Tlili, A., Yang, J., & Wang, H. (2020). *Handbook on facilitating flexible learning during educational disruption: The Chinese experience in maintaining undisrupted learning in COVID-19 outbreak*. Smart Learning Institute of Beijing Normal University.

5. Johnson, D. W., & Johnson, R. T. (2019). *Cooperative learning and student achievement: Why does groupwork work?* Annals of the American Academy of Political and Social Science, 586(1), 83–97. https://doi.org/10.1177/000271620 2250211

6. Lee, J., & Shin, M. (2021). *AI-powered virtual reality for hospitality training: Effects on student learning outcomes*. International Journal of Contemporary Hospitality Management, 33(3), 1154–1172. https://doi.org/10.1108/IJCHM-09-2020-1038

7. Tussyadiah, I. P., Jung, T. H., & tom Dieck, M. C. (2018). *Embodiment of wearable augmented reality technology in tourism experiences*. Journal of Travel Research, 57(5), 597–611.

https://doi.org/10.1177/004728751 7704090

8. Wang, Q., Woo, H. L., Quek, C. L., Yang, Y., & Liu, M. (2012). *Using the ADDIE model to design a virtual learning environment for hospitality education*. Educational Technology Research and Development, 60(5), 961–981. https://doi.org/10.1007/s11423-012-9268-1

9. World Tourism Organization (UNWTO). (2022). *Tourism and hospitality education: A global perspective*. https://www.unwto.org/

10. Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development* (p. 41). Englewood Cliffs, NJ: Prentice Hall.

11. VanLehn, K. (1996). *Cognitive skill acquisition*. In J. Spence, J. M. Darley, & D. J. Foss (Eds.), *Annual Review of Psychology* (Vol. 47, pp. 513–539). Palo Alto, CA: Annual Reviews.

12. Barab, S. A., Squire, K., & Dueber, W. (2000). *A co-evolutionary model for supporting the emergence of authenticity*.

Educational Technology Research and Development, 48(2), 37–62. https://doi.org/10.1007/BF0231340 0

13. Cook, D. A. (2014). *The value of simulation-based education: Toward a theoretical framework. Medical Education*, 48(3), 206–214.

    https://doi.org/10.1111/medu.12363

14. Grossman, P., Compton, C., Igra, D., Ronfeldt, M., Shahan, E., & Williamson, P. W. (2009). *Teaching practice: A cross-professional perspective. Teachers College Record*, 111(9), 2055–2100.

15. Jeffries, P. R. (2005). *A framework for designing, implementing, and evaluating simulations used as teaching strategies in nursing. Nursing Education Perspectives*, 26(2), 96–103.

16. Kreber, C. (2001). *Learning experientially through case studies? A conceptual analysis.*

Teaching in Higher Education, 6(2), 217–228. https://doi.org/10.1080/1s35625101 20045203

17. Hakeem, S. A. (2001). *Effect of experiential learning in business statistics. Journal of Education for Business*, 77(2), 95–98. https://doi.org/10.1080/088323201 09599052

18. Chernikova, O., Heitzmann, N., Stadler, M., Holzberger, D., Seidel, T., & Fischer, F. (2020). Simulation-based learning in higher education: A meta-analysis. Review of Educational Research, 90(4), 499–541. https://doi.org/10.3102/003465432 0933544

19. Maier and Thomas's 2013 study, "Hospitality Leadership Course Design and Delivery: A Blended-Experiential Learning Model,

20. Drennan, 2008, What skills and attributes does an accounting graduate need?