

# Perceived usefulness of simulation learning in hospitality education

Usefulness of  
simulation  
learning

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## Abstract

**Purpose** – The purpose of this study was to analyze the effectiveness of simulation learning techniques within both face-to-face and online courses. The specific objective for this study was to answer two questions: (1) What are the specific benefits the simulation learning component adds to the course(s)? (2) How do students perceive the usefulness of the simulation learning component to their prepared readiness to enter the industry?

**Design/methodology/approach** – An open-ended survey was administered at the end of the course to conduct a content analysis of student perspectives of the incorporation of cloud-based, educational simulation learning into educational courses. A discussion of the students' perspective of the SIM labs benefits, ease of use and perceived usefulness of this trending learning component has been reviewed, along with the comparison of the online and face-to-face viewpoints.

**Findings** – Some of the identified successes were the ability to collaborate between online and face-to-face classes. Another was the ability to incorporate the application and decision-making components of the textbook into their virtual position of the simulation (SIM) learning lab from an owner's/general manager's perspective. Finally, the SIM labs provided the instructor with a measurable tool to have students compete in a healthy environment.

**Originality/value** – Valuable insights were gained into the student's perspective and helped in needed adjustments to better utilize this type of active learning. By studying a specific simulation learning component of this type of electronic learning (e-learning,) valuable contextual explanations to support the other types of active learning techniques mentioned above can be gained.

**Keywords** Simulation learning, Hospitality education, SIM lab

**Paper type** Research paper

## Introduction

A simulation is a synthetic environment that is created to manage experiences with reality (Bell, Kanar, & Kozlowski, 2008). In the context of this study, simulation-based training in hospitality and tourism education offers an opportunity for students to develop and practice competencies in a controlled environment and receive feedback (Salas, Wildman, & Piccolo, 2009). In the literature review, this paper will explore many of the various pedagogical techniques that are necessary to review. These include experiential education, learning through simulation and active learning.

Several previous studies focused on the rapid growth and development in technology aiding the learning outcomes and course development in the hospitality and tourism sector. Some of these studies focus on active learning (Morosan, Dawson, & Whalen, 2017), service learning (Lin, Kim, Qui, & Ren, 2017), students' perception of readiness (Sun, Lee, Lee, & Law, 2017), virtual field trips (Patiar, Ma, Kensbock, & Cox, 2017) and electronic learning (Annaraud & Singh, 2017). Most universities are now offering hybrid and online courses, especially since the onset of the pandemic. These percentages are predicted to increase, along with the quality of the online course content as a result of more courses being offered online.

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As reported by the Integrated Postsecondary Education Data System (IPEDS), in 2014, 28% of all undergraduate students were taking at least one online course, with 12% of this figure being fully online (Bailey, Vaduganathan, Henry, Laverdiere, & Pugliese, 2018). However, in 2019, it was reported that 21.5% of all undergraduate students were taking at least one online course, with 15% of this figure being fully online (National Center for Education Statistics, 2019). The existing literature suggests it is not just technology making the difference in students' learning, but also their perceived attitudes toward those teaching systems to increase effectiveness (Sun *et al.*, 2017).

The purpose of this study was to analyze the effectiveness of simulation learning techniques within both face-to-face and online courses. The specific objective for this study was to answer two questions: (1) What are the specific benefits the simulation learning component adds to the course(s)? (2) How do students perceive the usefulness of the simulation learning component to their prepared readiness to enter the industry? As predicted, the findings were an overwhelming positive response to the addition of utilizing web-based simulations within the hospitality education curriculum. There are several theoretical explanations that help support the findings of this study.

### Literature review

One of the major supporting theories is Fishbein and Ajzen's research (1980), which was aimed at understanding attitude-behavior consistency. Their research program resulted in the development of the theory of reasoned action (TRA) (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). The theory assumes that behaviors are frequently a consequence of reasoning processes. Behaviors are a product of intentions to behave in select ways, attitudes toward performing and social influence under conditions of volitional choice.

#### *Experiential education*

Experiential education has been one of the most popular approaches in recent years to help enhance students' learning experience (Lin *et al.*, 2017; Kiser & Partlow, 1999). Experiential learning is "the process by which knowledge is created through transformation of experience: knowledge results from the combination of understanding and transforming the experience" (Kolb, 1984, p. 41). This type of learning is considered one of the key features of the service industry education.

#### *Learning through simulation*

Simulation-based training has been found to expedite the development of management skills, making it a valuable tactic for use in management education programs (Salas *et al.*, 2009). As defined by Douglas, Miller, Kwansa, and Cumming (2008), simulations are designed to help students participate in real-world decision-making, without the associated risks. One primary category of simulations is computer-based, which offers an opportunity for electronic learning. Electronic learning (e-learning) is a mode of in which various teaching techniques are being utilized to actively engage students in an experiential manner. E-learning has become synonymous with all levels of all educational technologies that support and teach either electronically or technologically (Amaraud & Singh, 2017).

Pratt and Hahn (2016) posited that computer-based simulations could bridge the gap between information presented and experiential learning. They used the Hotel Operations Tactics and Strategy (HOTS) to examine hotel management students' expectations of and satisfaction with the use of this simulation as a learning tool. A sample of 104 paired survey responses was collected and analyzed using importance-performance analysis (IPA).

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Their results indicated the HOTS simulation was effective in developing skills in decision-making and problem-solving, and allowed students to gain a general management perspective on operations. It was noted, however, that simulations did fail student expectations at times, and that educators would do well to help manage student expectations.

Quah, Roseline, and Aziz (2021) sought to examine hospitality student attitudes toward, and satisfaction with, the use of the Front Office Tasks Simulator (FOTS) as a learning tool. They used purposive sampling to collect questionnaires from hospitality education students in their third semester year of college. Results indicated high levels of student satisfaction using FOTS, and that this simulation can increase student understanding and satisfaction of learning hotel operations.

Motivated by previous studies that showed that hospitality students had low motivation and interest to learn in food safety-related courses, Yu, Sirsat and Madera investigated the use of simulation games in this area. The purpose of their study was to “examine the effects of a tablet PC (TPC) simulation game as a class activity on students’ motivation to learn food safety and the factors influencing students’ motivation change” (2018, p. 82). Results indicated that the TPC-simulation game resulted in significantly increased motivation to learn about food safety. This increase was attributed to the students’ engagement with learning material with both cognitive and affective structures.

Virtual learning environment (VLE) systems offer opportunities for simulation-training. Second Life (SL) is a very popular VLE system for hospitality and tourism training. Nguyen, Vo, Van Nguyen and Nguyen (2021) conducted a fifteen-week quasi-experimental study on two hospitality classes ( $n = 81$ ) to investigate the effectiveness of SL VLE for Vietnam hospitality students, with a focus on speaking skills. Data were collected via English-speaking tests, an attitudinal questionnaire and a semi-structured interview. Results indicated that SL had a positive impact on students’ language proficiency progress, as well as positive perceptions about the use of SL VLE. It was recommended that hospitality programs invest in SL VLE training for educators and students.

### *Active learning*

Active learning is a practice that simultaneously involves a student in, and makes them reflect on, the activity (Bonwell & Eison, 1991). Active learning has also been described as a model of instruction focusing the responsibility for learning on the learner, not necessarily on the instructor (Patiar *et al.*, 2017). Active engagement leads to higher retention and thus makes active learning more effective.

The industry of hospitality and tourism has a rising need to introduce innovative pedagogy for disseminating job knowledge and soft skills. As evidenced by the literature, simulation labs can present real-life scenarios that align with theory and practice, help support active learning and have been highly effective in hospitality and tourism student learning (Patiar *et al.*, 2017).

In the course design, the instructor does not have to employ all of these techniques, but it is encouraged to have an intentional learning outcome that supports the chosen technique. To add a simulation lab without an intentional outcome can be considered by students as busy work. Since this was not an optional component of the course, the students did not have a choice of participation. The instructor should consider the technology acceptance model (TAM) before considering the adoption of the technology.

The TAM was developed by Davis (1989) as an extension of the theory of reasoned action (TRA) of Ajzen and Fishbein (1980). The TAM suggests that users’ decision to adopt an electronic device is primarily determined by perceived usefulness and perceived ease of use. The TRA has been well supported and used in social psychology research and theorizes that a person’s behavior is determined by the individual’s intention to perform a certain behavior

and that intention is a function of his/her attitude toward the behavior and his/her subjective norm (Annaraud & Singh, 2017).

By using the TAM model, we identified specific beliefs that support the perceived ease of use (*E*) and the perceived usefulness (*PU*). Perceived usefulness is defined as a person's salient beliefs that using technology will enhance their job performance (Davis, 1989). Perceived ease of use is a person's salient beliefs that using the system will be free of problems, issues and/or challenges. Therefore, these two items will add to a positive attitude toward the behavior, which will strengthen the intention to use, which, in turn, will lead to a greater likelihood of actual system use and success (see Figure 1).

### Methodology

Qualitative research methodologies offer great value when exploring a phenomenon, as they allow for the rich investigation of cause and effect relationships (Achterberg & Arendt, 2008; Arendt *et al.*, 2012; Curry, Nembhard, & Bradley, 2009). The purpose of this study was to explore the experiences of undergraduate hospitality and tourism students in the United States in simulation learning techniques in both online and face-to-face courses. The lived experiences of these students can provide insight into how they received and navigated the addition of simulations in higher hospitality education.

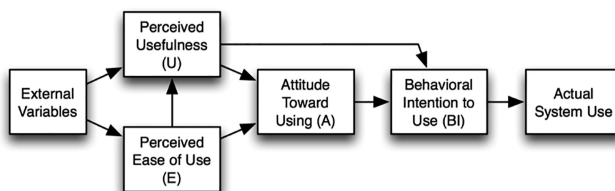
### Sample

The sample consisted of 81 undergraduate hospitality and tourism management students enrolled at a public institution in the United States. The data were collected via two different course delivery modalities, online and face-to-face. The largest sample consisted of online students, primarily adult learners, above the age of 21. The sample of online students does not represent a specific area of the United States; several of these students are in the military making it difficult to pinpoint a specific region of student representation. The face-to-face students are traditional college students, 18–21 years old, who are in the southern region of the United States. While this was a convenience sample, it was representative of the population of hospitality students in the United States.

Each student was enrolled in a course in which a SIM lab was adopted and incorporated into the required assignments for the class. SIM lab assignments were graded and instructed to be completed individually.

### Data collection

Data were collected from students enrolled in eight different classes from fall 2018 to fall 2021. Six of the courses were fully online, and two were face-to-face. Participation was voluntary and confidential, and involved the completion of five open-ended questions, which were submitted survey-style at the end of each course. This data collection approach was selected in order to encourage participants to share their thoughts and experiences openly and freely.



**Figure 1.**  
Technology acceptance model (TAM)

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Data collection ended when no new concepts emerged from the surveys, and thus data saturation was achieved.

Usefulness of  
simulation  
learning

The following questions were included in the survey:

- Q1. What did you like most about the simulation activities?
- Q2. What did you dislike most about the simulation activities?
- Q3. Do you feel that the simulation activities helped you to better understand hotel/restaurant operations?
- Q4. Do you feel more prepared to operate a restaurant in real life after going through all the simulation activities?
- Q5. Would you recommend that the simulation activities be used in future hotel and restaurant management courses?

### *Analysis*

Survey results were downloaded and distributed to each member of the research team.

A content analysis was performed independently by each researcher by systematically and rigorously reviewing survey response content. Coding was performed to bring together similar data based on themes and concepts (Lewins & Silver, 2007). Themes were then identified and examined for patterns and structures of data (Bergman, 2010).

Triangulation helps to validate qualitative research findings when it is confirmed that different observers of the same data produce the same results (Nightingale, 2009). Researchers read and independently coded responses, thus enhancing the reliability of the analysis through triangulation (Creswell & Creswell, 2017). Attempts to maintain rigor were adopted through the use of within-design consistency, conceptual consistency and consistency of inference (Tashakkori & Teddlie, 2002). Attempts to strengthen reliability were conducted by establishing research protocol before collecting data to ensure that questions were presented consistently to each participant.

### **Results**

Analysis of the survey responses is presented below for each of the five questions:

- Q1. What did you like most about the simulation activities?

The top theme in this category was shown by 31% responding, with the SIMs being *real-life like/scenarios*.

I think I would be able to think back when operating a hotel in real life due to the simulation. I am a very visual person, and these activities would help me think back on what I did in each activity.

The thing that I liked most about the simulation activities is that they force you to make real-life decisions as if it were your restaurant. I also have always been a fan of computer simulations. Even though it is different, I grew up playing the SIMs game and it reminded me of the restaurant simulation. It really required you to think in-depth.

Second was an 18% response of liking the ability to see the actual *cause and effect relation* that occurred with their actions used within the SIM.

I liked that the SIM exercises showed us a tangible cause-and-effect relationship between many aspects of the industry. I found it interesting how menu placement can impact sales.

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Next was a response of 16% who liked the fact that the SIM was “game-like and virtual.” Other responses that had rates of less than 10% were *ease of use* (8%), *step-by-step directions/broken down aspects into manageable sizes/monitoring competition* (8%), *other or owner’s perspective* (7%), *specific sections* (marketing/staffing/layout/banquet, 5%), *difficulty of challenges* (4%), *able to redo or restart* (4%), *autonomy/feedback helped direction* (2%) and *authentic and engaging* (1%).

Q2. What did you dislike most about the simulation activities?

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The top theme extracted started with a 17% response rate identifying that they *followed all the directions and didn’t get the results needed*.

I only dislike that sometimes the correct answer isn’t displayed during the simulation, causing you to lose points.

I would do everything correctly and the numbers would not move as quickly in the challenge phase as in the learning phase.

Items that responded with a 13% rate were *unclear goals, need more explanation and amount of time needed to complete*. Next was a 10% response rate for *time limits/lack of feedback/navigation/technical difficulties*, and *quizzes and projects*. Other responses that were less than 10% included *not liking the challenge phase* (7%), *difficulty of assignments* (6%), *math problems* (3%), *lack of interest/not linked to learning management system* (3%), *compatibility* (2%) and *visual effects and other* (2%). The next three questions were a YES/NO/UNDECIDED response.

Q3. Do you feel that the simulation activities helped you to better understand hotel/restaurant operations?

The response of *YES (91%), NO (5%) and UNDECIDED (2%)*.

I absolutely do feel the simulation activities helped me understand the operations better because they brought the full spectrum of the restaurant business to life.

Q4. Do you feel more prepared to operate a restaurant in real life after going through all the simulation activities?

The response of *YES (84%), NO (15%) and UNDECIDED (0%)*.

I do feel more prepared to operate a restaurant in real life after doing the simulation activities because I have a better understanding of how to establish reports and know your true food costs.

Q5. Would you recommend that the simulation activities be used in future hotel and restaurant management courses?

The response of *YES (97%), NO (3%) and UNDECIDED (2%)*.

I would highly recommend this simulation to any future students. The in-depth analysis throughout the sections really gives you a firsthand look into how restaurants are run.

## Discussion

In this study, the results exposed the advantages and successes of the SIM labs, as well as some challenges. Our curriculum and course design were able to address some of these items,

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and we continue to offer highly engaging experiences that continue to provide a hands-on approach to learning. One example of this is the integrations of the third-party SIM labs within the learning management system. This integration made access and registration quicker, easier and automatic for the students, and grade recording was made easier for the faculty. Literature has found that the simulation teaching methods are mostly in topical courses (60%), capstone courses (75%) and professional courses (30%) (Oskam, Dekker, & Wiegerink, 2018).

Some of the identified successes were the ability to collaborate between online and face-to-face classes. Another was the ability to incorporate the application and decision-making components of the textbook into their virtual position of the SIM lab from an owner's/general manager's perspective. Also, the students learned that not everyone is a winner; students were rewarded with profits for good management decisions, and losses for poor management decisions. Finally, the SIM labs provided the instructor with a measurable tool to have students compete in a healthy environment and – believe it or not – some even stated it was fun!

With the many successes identified with the SIM Labs, there were several challenges that were prevalent as well. These included items like students' apprehensions, initial set-up for students, cost (if additional), the math portion incorporated within the SIM, managing resets/setting limits and YouTube solutions available to the students for "cheat" assistance. However, since this was a multi-year study, several of these challenges were able to be resolved. For example, the initial setup and managing resets/setting limits are automatic now that the third-party company has advanced to integrate with the various learning management system. As for cost, the department decided to support this engagement teaching method within the budget and cover the cost for all students. Several student licenses are purchased at one time every few years, and the third-party company tracks us on a declining balance based on enrollment numbers. With the students' apprehensions, that issue typically fixes itself with practice and success. Technology still intimidates students, but once they get started, their confidence begins to build, and they reach out in study groups to help others who may be struggling. One interesting item that emerged was that the online student group seemed to embrace the SIM lab assignment easier than the face-to-face students, and it is speculated that they are savvier with technology because of having to use it more in the coursework in general. As for the math portion, that may always be an intimidating part to non-accounting and finance majors. The major challenge that has not been resolved, especially with online students, is the YouTube videos that provide cheat assistance. This may continue to develop as a challenge as more and more users are continuously posting more help aids out on the web.

As for the future intentions of this learning component, the data provided a clear direction to incorporate SIM activities into other courses within the department and to continue to use open-source resources and SIM case studies to replace or supplement textbooks. Also, the SIM labs provided a pathway for more collaboration between online and on-campus classes via SIM opportunities when the same course topics are being taught in both platforms. In the literature, it has been noted that the lack of hospitality- and tourism-focused simulations at the undergraduate level is a gap that exists in the research (McGrath, Blaer, Williams, Wilson-Evered, & Whitelaw, 2020).

When surveying other faculty members in various university hospitality programs, the following responses supported the evaluation of the positive outcomes of utilizing web-based simulations.

I love web-based simulations. I have used them in face-to-face settings. It helps to engage students and enhance course lectures. – University of New Orleans

The SIM labs do provide additional depth for the concepts taught. I used Rev-Sim and though the students enjoyed it, I found it was a bit advanced for them. – Bethune Cookman University

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I do recommend using these SIMS activity assignments for future restaurant and hotel management courses because it does give the students a sense of what goes on in those operations. It shows students what must be done on a day to day basis in each area of the business. It shows that it takes way more people than just the manager to operate that business. – University of Pittsburgh at Bradford

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### Limitations and future study

As with any qualitative study, results are limited and cannot be generalized to the population at large. Future quantitative studies should be conducted with a larger sample of both online and face-to-face students. This sample represents that of a public university in the South; however, it may not reflect that of private institutions, or students who attend Historically Black Colleges and Universities (HBCUs). Another direction this study could expand would be to follow up with graduates a few years after graduation to assess how the simulations helped prepare them for their careers now that they are in the workforce. Themes from this study will be used to construct a quantitative instrument to conduct the future direction of the study, as recommended by the theory of planned behavior procedures (Ajzen & Fishbein, 1980). And finally, it would be advantageous to test the TAM model if the students were able to opt into the simulation labs and they were not automatically assigned as part of the course.

While this was the original speculation, the faculty was able to support this hypothesis with the data. However, it is realized that not every student may embrace this teaching method, but the majority seem to really enjoy this experience within their hospitality education. After reviewing the results, it was indicative that more courses within the department could benefit with higher engagement scores if more learning programs like the SIM labs were added to the course materials. These responses gave us a clear direction that helped to improve engagement, ease of use and whether to continue with this type of teaching method.

In conclusion, this study resulted in an overwhelmingly positive response to the addition of utilizing web-based simulations within the hospitality education curriculum.

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