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Emerging Technologies in Hospitality and Tourism Education and Training: A Systematic Literature Review

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Emerging Technologies in Hospitality and Tourism Education and Training: A Systematic Literature Review

Introduction

In the age of omnipresent technological advances and adoptions, it is important to explore the effectiveness of leveraging these various technologies as learning tools and modalities in the higher education classroom. Pressure is placed on educators to provide an engaging and interactive educational experience for the next generation of students who have grown up in a robust digital environment. While utilizing cutting edge technology in academic settings can provide a competitive advantage for students, exploration of the learning effectiveness amongst the various technologies and modalities is critical. The impact of faculty's perception of using emerging technologies in various settings and areas of study is also important in considering the effectiveness of technology in the classroom. Some faculty have not yet seen the value of using digital and technological approaches in the classroom (Hew, Jia, Gonda, & Bai, 2020), yet due to the Covid-19 pandemic have been forced to adapt.

Technology is not new to learning and education. In the late 1990's, networked computers forever changed the landscape and opened up possibilities for learning (Cicek, Bernik, & Tomicic, 2021). By 2016, digital learning and using emergent technologies became more common in classroom delivery. In 2020, the COVID-19 global pandemic has magnified the use of technology in education. Online distance education became a standard delivery modality at all levels of learning (Talib, Bettayeb, & Omer, 2021; Yarmak, Shkaiderova, Strashko, Bolshakova, & Garas, 2021). This has been true in most educational settings including hospitality and tourism classrooms (Kim, Jenny, & Han, 2021).

Kim and Kizildag (2011) argued that training in hospitality and tourism is improving with emerging technology, which offers enhanced opportunity and flexibility in the way information is communicated and assessed. Through the inclusion of technology, educational settings can also provide learning that can be achieved in a more engaging, effective and realistic way.

While there has been a significant number of studies investigating the use of technology in higher education classrooms (Talib, Bettayeb, & Omer, 2021), little investigation has been done related to the use of technology driven delivery methods in the hospitality and tourism higher education classroom. According to Akcayir and Akcayir (2017), “Investigating prior research in a field is important, as this reveals the current state of the field...” (p. 2). Exploring which technologies are more effective and which are less effective in hospitality and tourism higher education classrooms can ensure student learning and engagement. (Hall, 2021).

The purpose of this study was to examine what technologies and technological modalities of classroom learning have been explored in the hospitality and tourism academic research. This study aimed to conduct a systematic literature review of current and emerging technologies being investigated in hospitality and tourism higher education and training during the years of 2015-2021 in the top 25 hospitality journals. Specific research questions included:

RQ1. What types of technologies are currently being explored in hospitality and tourism education and training research?

RQ2. Of the research studies conducted, how are the technologies being incorporated into hospitality and tourism education and training settings?

Review of Literature

The impact technology is having in many areas of business and education is significant. Future higher education hospitality and tourism students are currently experiencing learning

through the use of technology in their K-12th classrooms. Over \$8 billion dollars was spent in 2016 in the US on technology for these classrooms (Herold, 2016). That number is projected to expand to \$342 billion by 2025 worldwide (American University, 2020).

The quality and development of technology in the learning space has also elicited increased usage in the classroom (Gutierrez-Braojos, Montejo-Gamez, Marin-Jimenez, & Campana, 2019). Various technology “offers many benefits for learning such as new and more immediate ways of accessing and creating knowledge, greater social interaction, engagement anytime and anywhere, and new modes of representation” (Lewin, et al., 2018, p. 394). As we consider higher education, utilizing the right technologies in various hospitality and tourism classrooms effectively will be critical to engage the students that have used this technology throughout their earlier educational experiences.

Using different methods and technologies in the classroom has shown an increasing emphasis on student participation. Students are more engaged and more focused on their own participation in learning when using various modes and technologies (Ryu & Jeong, 2019).

Many of the learners in today’s classrooms also have different “values and worldviews” than prior generations (Ruiz & Davis, 2017). They have grown up using technology for communication, building relationships, learning, and personal entertainment. According to Taylor (2010), these youngest generations of students are a different type of learner than anyone has experienced in the past. As a result, for these digital natives traditional methods are no longer effective (Taylor, 2010).

Finally, where and when learning takes place has been changed by digital learning (Ryu & Jeong, 2019). For many years, research has emphasized the importance of student engagement

in the classroom and with the subject matter. In “traditional” lecture-based face-to-face delivery, instructors often struggle in today’s classroom to keep students focused and engaged (Green, Tanford, & Swift, 2018). Humber’s (2021) study on engagement with online courses offered the notion that there were four main themes to consider including “doing the coursework, conversation in the classroom, communication with the instructor, and individualize [experiences]” (p. 18). Today’s learners are less passive and more engaged due to the use of digital technologies outside of the formal learning space (Ryu & Jeong, 2019). Garcia, Moizer, Wilkins, and Haddoud, (2019) argued that we have reached a stage in the learning process where learning design should be based “on active, constructive and knowledge building activities, which better meets the needs of students...” (p. 63). Green and Repetti (2015) argued that in the hospitality and tourism classroom, student engagement and improved learning outcomes are essential for effectiveness.

Yau, Cheng, and Ho (2015) argue that in addition to engagement, motivation is a key role in learning and that the instructional strategies used can affect student motivation. Ruiz and Davis (2017) suggest that motivation originates in an individual from within and is based on views, beliefs, and values. Yau, Cheng, and Ho (2015) suggest “Previous research found that different technology can have different effect on students’ motivation.” (p. 90).

In his book, Lang (2020) argues that learning involves the content/attention, encoding/processing and retrieving/applying the learning. Students having the attention span to work through this process is critical. He further argues that today’s students are being distracted by the constant presence of social media, texting, etc. Lang (2020) further contends that while paying attention to distractions is hardwired in our brains and that being distracted is not new, the amount of distraction that today’s students are bombarded with has increased exponentially.

Finding ways to compete with these interruptions and distractions and regain the focus of the student is important to the learning process. Leveraging technologies, developing new learning delivery methods and visual learning tools are ways to recapture student attention.

There are many different types of technologies being leveraged in classrooms today. Online learning is prevalent in higher education. Sisson and Kwon (2020) argued that today's learners appreciate the incorporation of technology through online education due to the convenience and reduced time restraints. The pandemic further intensified the use of online learning at every level of education.

Mobile technology is also shifting the teaching and learning paradigm. This technology is allowing self-directed learning where learners can choose to engage when and where they prefer. Both online or digital and mobile technologies make learning more available (Yang, Zhou, & Cheng, 2019).

Gaming technologies can also be effective in engaging students in their own learning. The various elements of game design including goal-setting and decision-making can motivate students to engage in learning in the same way that they are motivated to achieve rewards in the gaming environment (Elzein, Drenkard, Deyo, & Swartwout, 2015). Simulations can assist in transfer of information from the virtual world to the real world for students. Using scaffolding theory, students engaged in simulations can gradually reach higher levels of learning through successful completion at various levels of the simulation (Buckingham & Bongard, 2017).

Prior to the COVID-19 pandemic, the expectation was that educators would create student engagement through real-world problem-solving activities with the potential of using digital tools. Smith (2021) identified student engagement online was an expectation, but was not a requirement for all courses. Due to the global pandemic, higher education shifted dramatically into “non-traditional”

learning settings including online teaching and learning as a response to the pandemic crisis. A major digital tool during this time was video conference calling, such as Zoom. As the pandemic negatively affected traditional pedagogical practices and students' learning, change was crucial to ensure that hospitality educators competently deliver the curriculum in ways relevant to students (Smith, 2021). Utilizing zoom and other video conferencing platforms has become an essential part of education during COVID-19, especially for culinary and beverage labs (Orlowski, Mejia, Back, & Fridrich, 2021). Previous research has shown that online learning is designed with specific pedagogical content attributes and students who predominantly have selected this teaching modality (Agyeiwaah, Badu Baiden, Gamor, & Hsu, 2022). Though video conferencing tools aim to replicate face-to-face style interaction in the classroom, research has shown this approach is lacking the engagement of a traditional classroom (Smith, 2021). Thus, with the global pandemic making online learning the best available option, under social distancing and quarantine policies, the conversation on the effectiveness of online learning and its potential to thrive in the future continues (Lei & Siu Ian So, 2021).

Augmented reality, video learning, robotics, various digital platforms for online and distance learning are all a part of the digital and technological landscape being utilized in higher education classrooms (Buckingham & Bongard, 2017; Sobaih & Moustafa, 2016; Tussyadiah, Jung, & tom Dieck, 2018). One of the cutting-edge types of technology in the classroom is virtual reality which “refers to an immersive, interactive, multi-sensory, three-dimensional environment generated by a computer and combined with technology needed to build such environments.” (Cicek, Bernik, & Tomicic, 2021, p. 2). While there are many types of learning technologies available, empirical research to investigate their effectiveness in the hospitality and tourism classroom is essential.

The hospitality and tourism industry is reliant on data and analysis (Parvez, 2021). In addition to data and machine learning, the ability to use various technological platforms is essential in servicing customers, customer satisfaction and customer intention to return. Technology also plays a role in developing the skills of the employee. According to McGugan and Peacock (2005), "...there is a need to focus on the context of learning and to consider the learning that occurs between and within the different contexts of work and education" in the hospitality and tourism classroom (p. 17). While technology can be used effectively with hospitality and tourism students, some may find that certain types of technology interferes with their learning. To learn more, academic inquiry on the various technology tools available for learning in hospitality and tourism classrooms is important for preparing the student for the hospitality and tourism industry. This review of literature offers what is currently being considered in the top 25 hospitality and tourism journals and where there are gaps in the hospitality and tourism higher educational research regarding learning technologies.

Methodology

When conducting review studies, researchers use a variety of methods to select journals for review and criteria for selecting manuscripts. According to Akcayir and Akcayir (2017), "Examples include selecting a defined set of articles from important journals within the field (Hwang & Tsai, 2011; Nolen, 2009), selecting all articles published within the leading journals of the field (Karatas, 2008; Shih *et al.*, 2008), and using databases in which the studies are indexed such as ProQuest (Drysdale *et al.*, 2013)" (p. 2).

A systematic examination of the literature specific to hospitality and tourism was conducted for articles published in English between 2015 and 2021. The top 25 SCImago ranked tourism, leisure and hospitality management journals were initially considered for this study

(SJR, 2019). “The SCImago Journal & Country Rank is a publicly available portal that includes the journals and country scientific indicators developed from the information contained in the Scopus® database (Elsevier B.V.)...Citation data is drawn from over 34,100 titles from more than 5,000 international publishers and country performance metrics from 239 countries worldwide.” (SCImago, 2021).

Two researchers independently reviewed these 25 journals searching for articles appropriate for consideration and inclusion in this study. The journals were selected by cross-referencing each journal’s focus and scope with their respective relevance to this study’s research objective of reviewing current and emerging technology used in hospitality and tourism education and training. Eight of the top 25 journals were selected and included in the search. They included: a) Tourism Management, b) International Journal of Hospitality Management, c) International Journal of Contemporary Hospitality Management, d) Journal of Hospitality and Tourism Research, e) Current Issues in Tourism, f) Journal of Hospitality and Tourism Management, g) Cornell Hospitality Quarterly, and h) Journal of Hospitality and Tourism Technology. Two additional journals were included beyond the top 25 due to their distinct relevance to the research objectives. These journals were in the top 75 rankings and included: i) Journal of Hospitality & Tourism Education, and j) Journal of Human Resources in Hospitality & Tourism. During the six-year period identified for this study, the ten journals collectively published 6,121 articles on various topics related to the hospitality and tourism industry, see Table I. To determine how many of the articles published in this timeframe pertained to technology, the keyword “technology” was utilized. Of the 6,121 articles 2,729 (44.6%) were identified as involving technology generally.

Table I: Journals (*n*=10) and number of article (*n*=26) breakdown

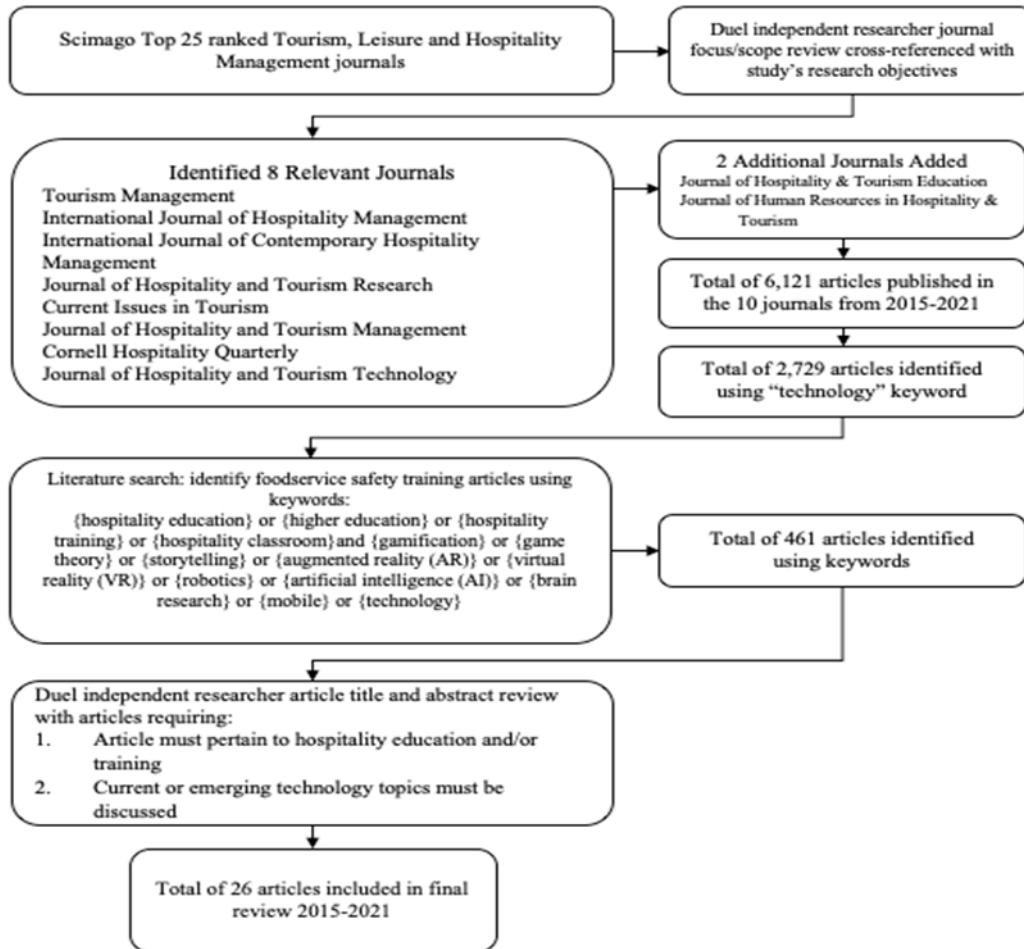
Journal	Total # of Articles Published (2015-2021)	# of Articles using Technology Keyword	# of Articles using Keywords	# of Articles used in this study
Tourism Management	1,220	826	54	0
International Journal of Hospitality Management	1,337	696	112	2
International Journal of Contemporary Hospitality Management	1,298	170	21	0
Journal of Hospitality and Tourism Research	297	205	1	0
Current Issues in Tourism	613	120	106	0
Journal of Hospitality and Tourism Management	541	305	60	1
Cornell Hospitality Quarterly	257	67	7	2
Journal of Hospitality and Tourism Technology	172	172	18	0
Journal of Hospitality & Tourism Education	234	104	74	19
Journal of Human Resources in Hospitality & Tourism	152	64	8	2

To further isolate articles specifically targeting current and emerging technology used in hospitality and tourism education and training, several criteria were used: a) peer-reviewed articles only, b) only articles written in English, c) articles published between 2015-2021, d) hospitality and tourism education and training in the article’s setting, and e) articles that matched researcher identified keywords (see, Figure I).

The following keywords were used in various combinations to search for articles: hospitality education; higher education; hospitality training; hospitality classroom; gamification; game theory; storytelling; augmented reality (AR); virtual reality (VR); robotics; artificial intelligence (AI); brain research; mobile; and technology. The search yielded 461 articles containing the keywords, representing 16.9% of articles initially identified (*n*=2,729) as

Figure I: Flow Diagram of Study Selection

containing technology. But only, 7.5% of the total articles published ($n=6,121$) in the targeted journals, as shown in Figure I.



Next, each of the 461 article abstracts were reviewed independently by two researchers using a developed protocol for inclusion. The protocol included: 1) article must pertain to hospitality education and/or training and 2) current or emerging technology topics specific to training or education must be discussed in the article. Two rounds of independent review for inclusion were conducted, with an initial interrater reliability of 66.67%. After a discussion and further review, round two interrater reliability was 91.67%. A total of 26 articles were identified for inclusion in this study's protocol. Finally, each article was analyzed to answer the research

questions, such as to identify what technology is being investigated as well as how it was being incorporated into the learning process in hospitality higher education classrooms.

Results

A total of 26 studies were included in this review period of 2015-2021, see Table II. Each year had multiple studies published with a range between two - eight published per year. 2017 had the most studies published with eight, while the final three years had two, three, and two, respectively. The majority of studies ($n=20$) used hospitality/tourism/hotel management undergraduate students as the sample; two additional studies investigated hospitality faculty. The remaining five studies investigated hospitality industry personnel training including: hotel and restaurant new hires, foodservice employees, hotel employees, meeting planners, and hotel executives.

Numerous forms of technology were implemented in the 26 studies. The most identified technology used simulations, virtual field trips, and general online training, with four studies each. Other technologies included clickers ($n=2$), video ($n=2$), wearable ($n=1$), social networks ($n=1$), virtual meeting ($n=1$), tablets ($n=1$), and games ($n=1$). The targeted studies implemented the technology in several ways; six used it in an in-person setting, while 12 used it as a remote option, and eight used it as a replacement or hybrid option. Finally, of the 26 articles used, 23 included quantitative methods, two used qualitative methods and one used a mixed method design.

Table II: Characteristics of Articles' Technology Used & Implementation Method

Author(s), year	Sample ^a	Technology Used	Implementation Method
(Tracey, 2015)	Hotel and restaurant newly hired line-level and management staff	Simulations and AV	Three content areas were investigated using two approaches, passive or active. Technology was incorporated into the active approach
(Ravichandran, <i>et al.</i> , 2015)	Foodservice employees 55 years and older	Various formats	Older employee training programs
(Wua, <i>et al.</i> , 2015)	Hotel employees	Wearable technology (Google Glass)	Examine how gender, service outcome and adoption of wearable technology together influence consumer satisfaction and revisit intentions
(Pratt & Hahn, 2015)	Hotel and tourism undergraduate students	Online simulation	Simulation incorporated into a capstone course
(Green & Repetti, 2015)	Hospitality undergraduate students	Clickers	Educational technology in the form of clickers were used in a hospitality financial accounting class
(Sobaih & Moustafa, 2016)	Tourism and hotel management students	Social networking sites	Social networking sites were used to communicate course content in developing countries
(Abbas, <i>et al.</i> , 2016)	Hospitality and Tourism undergraduate students	E-learning systems	Various e-learning systems were implemented into online hospitality courses
(Lee & Singh, 2016)	Executives and managers in Hong Kong hotels	Computer based-training	Computer-based training was shown to be used in various hotel departments in varying degrees
(Hsu & Minglong, 2017)	Hospitality undergraduate students	22 low and high tech tools	Usage frequency and effectiveness of 28 methods and 22 tools were implemented in various ways.
(Patiar, <i>et al.</i> , 2017)	Hospitality undergraduate students	Virtual field trip website	Students used video conferencing to take a virtual field trip
(Patiar, <i>et al.</i> , 2017)	Hospitality undergraduate students	Virtual field trip website	VFT included aspects of managing the food and beverage function of hotels and supplemented the delivery of face-to-face teaching
(Annaraud & Singh, 2017)	Hospitality faculty & undergraduate students	Massive Open Online Courses	Massive Open Online Courses were used to deliver content
(Sox & Strick, 2017)	Hospitality undergraduate students	Virtual meeting	Virtual meetings were incorporated into meeting and event planning to create hybrid meetings
(Morosan, <i>et al.</i> , 2017)	Hospitality undergraduate students	Tablets	To take advantage of all of the opportunities offered by the tablet technology, the instructor used the iPad in all class activities
(Patiar, <i>et al.</i> , 2017)	Hotel management undergraduate students	Virtual field trip	The virtual field trip technology was used to orientate students with skills and knowledge of food and beverage management in hotels
(Abbas, 2017)	Hospitality and Tourism undergraduate students	Online course management tool	Technology used to supplement face-to-face course teaching
(Green, <i>et al.</i> , 2018)	Hospitality undergraduate students	Clickers	Clickers were used to encourage student engagement in course lectures
(La Lopa, <i>et al.</i> , 2018)	Hospitality faculty	Various formats	Active learning approaches were discussed in the classroom setting
(Deale, 2018)	Hospitality and Tourism undergraduate students	Video technology	Video technology was used to connect students around the globe for an international hospitality course experience
(Bernardes, <i>et al.</i> , 2019)	Hospitality undergraduate students	Online training	Online training system was compared with on-the-job training
(Ampountolas, <i>et al.</i> , 2019)	Hospitality undergraduate students	Hotel simulation	Simulation was used to supplement lectures and theory
(Sisson & Kwon, 2020)	Meeting planners	Massive Open Online Courses	Massive Open Online Courses were used to deliver meeting planner learning content
(Lipford & Rood, 2020)	Hospitality undergraduate students	Video clips	Video clips were used to enhance human resource case studies
(McGrath, <i>et al.</i> , 2020)	Hospitality undergraduate students	Simulations and games	Simulations and games were implemented into the Australian Qualification Framework
(Patiar, <i>et al.</i> , 2021)	Hotel management undergraduate students	Virtual field trip	The virtual field trip technology was used to orientate students with skills and knowledge of food and beverage management in hotels
(Poole, <i>et al.</i> , 2021)	Hospitality undergraduate students	Game based learning	Game based learning was used in a wine education course to enhance understanding of wine aromas

Discussion

This study aimed to conduct a systematic literature review of current and emerging technologies being investigated in hospitality education and training during the years of 2015-2021 to identify what types of technologies are currently being explored, as well as how the technologies are being incorporated in the classroom or the learning. The initial article review process identified over 6,000 articles published during the timeframe. Once the single keyword of “technology” was input, over half the articles were eliminated with 2,729 (44.6%) remaining. Once all of the keywords were entered and abstracts were reviewed 26 articles remained, resulting in identifying that only 4.2% of all articles published during this timeframe were focused on technology applications in the hospitality and tourism classroom. This is an important

point to make as technology is clearly prevalent in current hospitality and tourism literature, yet the use of technology in hospitality and tourism education and training is greatly lacking. Additionally, the current study identified a negative trend in the number of studies being conducted per year with less in the final three years (2019-2021) than in the first three years (2015-2018) of the study period. This may be addressed as technology usage through the pandemic has increased and new studies may explore this phenomena. Further investigation of emerging trends and a better understanding of which technologies lend themselves to more effective student learning will be an important focus moving into the future.

Each of the twenty-six studies under review investigated some form of technology in the hospitality and tourism education or training setting. With twenty of these studies investigating technologies specific to hospitality and tourism higher education students. Only a few investigated technology and training in the industry setting including: hotels and restaurants (Tracey, 2015), foodservice employees (Ravichandran, Cichy, Powers, & Kirby, 2015), hotel employees (Wua, Fan, & Mattila, 2015), meeting planners (Sisson & Kwon, 2020), and hotel executives (Lee & Singh, 2016).

Analysis of technologies used in the twenty-six articles showed that the majority targeted current technologies as educational or training tools. The most utilized technology was simulations (Ampountolas, Shaw, & James, 2019; McGrath, Blaer, Williams, E., & Whitelaw, 2020; Pratt & Hahn, 2015; Tracey, 2015) with general success. Yet, each of the studies utilized the simulation in different ways. For example, Tracey (2015) compared active learning (simulation) and passive learning (lecture-style) with hotel and restaurant new hires showing active to be a more effective approach. Whereas, Ampountolas, *et al.* (2019) used a hotel simulation to supplement lectures and theories previously discussed in the classroom. Yet

another approach was to use a simulation as a capstone or final qualification assessment to assess several years of knowledge in an interactive manner (McGrath, Blaer, Williams, E., & Whitelaw, 2020; Pratt & Hahn, 2015).

General online training technologies were prevalent within the articles reviewed including online course management systems used to enhance and supplement face-to-face (Abbas, 2017) and online courses (Abbas, Jones, & Hussien, 2016). Conversely, Sobaih and Moustafa (2016) showed that social networking sites can be successfully used to communicate course content in developing countries in which online course management systems are not available. Lee & Singh (2016) used computer-based training for hotel executives and managers in various departments with positive results. Other examples included online training technology used included massive open online training courses which showed a high level of effectiveness for both meeting planners (industry participants) (Sisson & Kwon, 2020) and hospitality and tourism undergraduate students (academic participants) (Annaraud & Singh, 2017).

The use of the virtual field trip was another recurring technology used to increase the exposure hospitality and tourism undergraduate students received without leaving the classroom (Patiar, Kensbock, Ma, & Cox, 2017). Recently, Patiar, *et al.* (2021) showed the usefulness of the virtual field trip for orienting hospitality and tourism undergraduate students to various departments in hotels and restaurants during the COVID-19 global pandemic when in-person field trips were not possible. Additionally, Deale (2018) showed that the use of video conferencing technology was advantageous when used to connect hospitality and tourism students around the globe for an international course experience. Finally, Sox and Strick (2017) took video conferencing a step further and incorporated the technology into meetings with

undergraduate students and meeting and event planners in the industry to provide further exposure for students.

Several studies focused on hardware technology in their research including the use of clickers and their effectiveness in a hospitality and tourism financial accounting course (Green & Repetti, 2015). In a similar study clickers were used to assess student engagement in course lectures (Green, Tanford, & Swift, 2018). Morosan, Dawson, and Whalen (2017) explore the effectiveness of incorporating the use of tablets into all class activities in an attempt to increase engagement and understanding of course content.

Some novel approaches to incorporating technology into hospitality and tourism education and training were identified including using a game-based learning technology in a wine education course to enhance the understanding of wine aromas (Poole, Maier, Wiss, & Smith, 2021). In a different study, wearable technology (Google Glass) were used to train hotel employees to improve customer satisfaction and revisit intention (Wua, Fan, & Mattila, 2015). While there were studies throughout this review exploring some of the technologies and their effectiveness in hospitality and tourism classrooms, it was identified that there is paucity of inquiry regarding emerging technologies being researched for their inclusion and adoption into hospitality and tourism higher education classrooms.

While there are many new technologies that can improve the student experience and increase their learning, they are not equal in their effectiveness or application. Exploring the types of technology and in which circumstances they should be used becomes even more important. Covid-19 increased the demand for online and remote learning during the pandemic. It also broadened our perspective on what is possible. With this greater exposure to learning online, more research is needed to investigate the positive and negative impacts on students and

their experiences in hospitality and tourism's higher education classroom learning. There are also emerging technologies that will play a greater role in the classroom such as leveraging multiple modalities simultaneously, embracing virtual reality and leveraging augmented reality.

Conclusions

This study conducted a systematic literature review of current and emerging technologies being investigated in hospitality and tourism higher education and training during the years of 2015-2021 in the top 25 hospitality and tourism journals as ranked by SCImago (2021). It was identified that during the timeframe of this study the predominant technologies being used were simulations, virtual field trips, and general online training. Other technologies included clickers, video, wearables, social networks, virtual meeting, tablets, and games. The current study also identified current gaps in types of technology underrepresented in the body of literature, including a lack of investigation into emerging technologies such as augmented reality and virtual reality. The targeted studies implemented the technology in several ways; including in-person, remote, and as a replacement or hybrid option. Multiple research methods were used to assess the effectiveness or usefulness of the technologies used. As we consider all of the types of current and emerging technologies with applications in hospitality and tourism education, this study demonstrates that there is a paucity of empirical research on use and effectiveness of the various technologies and modalities in the hospitality and tourism higher education classroom.

Limitations and Future Research

Though we targeted the top 25 hospitality, leisure, and tourism journals (SCImago, 2021), there could be additional articles relative to our study in other journals not reviewed here. Additionally, this review only went back to 2015, technology is constantly changing and while there may have been research conducted prior to 2015, the authors believe that older research

could be considered less relevant given the exponential technological advances currently being experienced. Results of this review illustrates a need for future research to examine emerging technologies and how to incorporate them into the hospitality and tourism higher education classroom. Furthermore, there is little theoretical work as evidenced through this study to form a basis for inquiry. With the evident dearth of academic research in the area of learning and technology, there is tremendous opportunity for exploration in the effectiveness of the various current and emerging technologies and learning goals in hospitality and tourism higher education classrooms. New theoretical models are needed to further the current body of literature in these areas. The hospitality and tourism industry is experiencing unprecedented application of multiple types of technologies. Incorporation in hospitality and tourism higher education classrooms has great potential and opportunity for further exploration and inclusion. The key is to empirically explore which learning technologies will be most effective for the next generation of students. As researchers and educators, it is up to us conduct the necessary inquiries and develop the theories in this new technological environment.

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