Academic Papers

Developing a framework for designing an Events Management Training Simulation (EMTS)

Anestis K. Fotiadis [a,*], Marianna Sigala [b]

[a] Department of Entertainment Management, I-Shou University, Kaohsiung, Taiwan
[b] Department of Business Administration of the University of the Aegean, Chios, Greece

ARTICLE INFO

ABSTRACT

The study aims to develop a conceptual framework for assisting tourism educators to construct an Events Management Training Simulation (EMTS) educational tool. The simulation consists of two parts: a simulated event management game that is based on scenario planning; and an interactive e-learning platform providing educational material and student support for completing the game's decision-making tasks. The educational goals of the simulation are to enable the students to acquire and understand subject specific knowledge, but also to improve their generic management skills related to planning, budgeting, decision-making, and team work.

© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

Technology applications have been diffused in various industries during the last few decades and the tourism industry is not an exception (Buhalis & Law, 2008). Advances in virtual world technology and simulations have also become a popular educational application, because of their affordances in computer-mediated communication (CMC) and the latter's benefits in enhancing the educational processes (Guttentag, 2010; Wang, 2011a; Sigala, 2013; Sigala, 2004). By using simulators, the users are immersed in environments that give them the feeling of direct participation in a world that looks and behaves like the real one. Today, simulators are some of the most advanced tools in education, as they enrich the learning processes through the usage of complex software and rapid computing (Chittaro & Ranon, 2007; Hsu, 2012; Cronan & Douglas, 2012). Educational simulators are applied in numerous industries, such as in the military, the automobile industry, the medicine and health (Anderson & Lawton, 2009).

Although training simulators have also been developed for the tourism context, they mainly focus on the hospitality sector and only very few applications simulate event management operations (Feinstein & Parks, 2002; Martin & McEvoy, 2003). Due to the dynamic and complex nature of the tourism industry, tourism students are required to understand and be able to manage complex environments and situations (Kendall & Harrington, 2003). It is therefore necessary to expose them to first-hand industry experience by embedding them within natural or artificial business environments in order to build their industry specific knowledge and more importantly, to enhance their business understanding and management capabilities (Sigala, 2013). As students and educators cannot always access and experience real tourism industry environments, the development and integration of simulated business environments within tourism educational practices becomes very critical. This paper focuses on the fast growing sector of event management and it aims to develop and propose a simulated environment that can allow the students to

* Correspondence to: Department of Entertainment Management I-Shou University in Kaohsiung No.1, Sec. 1, Syuecheng Rd. Dashu District, Kaohsiung City 84001 Taiwan. Tel.: +886 975255302.
E-mail address: anesfottiadis@isu.edu.tw (A.K. Fotiadis).

better understand the industry context and operations of events management by participating in an educational game that combines theoretical knowledge with industry specific management activities. As students do not always have the possibility to participate in the organisation and implementation of real events during their studies, their participation in event management simulated worlds can significantly help them to understand and learn how to perform in real industry environments.

In this vein, the purpose of this paper is to develop a framework for designing an Events Management Training Simulation (EMTS) educational tool. To that end, the paper first reviews the concept and the educational benefits of simulations in (business and tourism) education by analysing the related literature and describing the design and the learning aims of some of the major simulation tools. Later, research related to the pedagogical principles and the design elements of business management simulations are reviewed, while an online research is conducted for identifying the learning aims of courses on events management. The implications of these two fields are applied for developing the conceptual framework of the EMTS. Analytically, the learning aims of the EMTS are first specified according to the skills and knowledge that management courses on event management aim to achieve. Then, the theoretical principles used for developing the design framework of the EMTS are presented and used for further describing in details the design elements of the EMTS. Finally, the paper shows how the design elements of the EMTS can contribute to the achievement of its educational/learning aims. The paper concludes with implications to educators and technology developers alike in terms of further testing and improving the design of the EMTS.

2. Simulations in education

2.1. Definition, educational benefits, advantages and disadvantages of simulators

Advances and applications of Information and Communication Technologies (ICT) affect all areas of life. The continuous increase of computational power and memory capacity of computers, as well as the development of user friendly human - machine communication interfaces have afforded the development of numerous technological applications with excellent user interaction affordances. Education represents one of the sectors with the greatest number of such human-computer interactive applications (Vogel et al., 2006). ICT became the most popular pedagogical tool, since they do not only support and enhance, but they also transform the traditional teaching and learning processes and consequently, they provide enhanced educational benefits in terms of learners' abilities and skills to acquire, understand and apply knowledge (Sigala, 2002; Sigala, 2013).

Amongst all educational ICT applications, simulations are considered as the utmost user interactive application, as they enable numerous user-computer and user-to-user interactions (Vogel et al., 2006; Vos, 2010). Indeed, the ultimate simulation is seen as an online computer-based world, which allows users to actively interact with one another. This is a process which enables the users to participate in an abstract space, but still allow human-beings to represent, manage and interact with highly complex data in a real and natural manner (Foster, 2011). In the simulated environment, the users perceive events and objects as if they are in the real world. Simulations are also proved to provide greater educational benefits than traditional learning methods (Cronan, Léger, Robert, Babin, & Charland, 2012; Ferreira, 1997; Coffey & Anderson, 2006). For example, survey findings from student assessment tests revealed that medical students participating in an educational simulator achieved higher performance results than students who only used printed educational material (Grundman, Wigton, & Nickol, 2000).

Table 1 summarises the literature discussing the major educational advantages and disadvantages of simulators. The key advantage of simulations is that they allow the users to experience and interact with an environment that is identical to the real world, while it is also safe and provides a degree of control that is difficult to achieve in real conditions. For that reason, the application of simulators has been very popular in military and medical science, since the simulation enables the users to create and test different scenarios for training purposes without risking any actual economic or human losses (Schulzke, 2013). For example, doctors and nurses can improve their knowledge and decision-making skills in simulated specialized surgeries and other medical scenarios without risking the life of patients (Schmitt, Agarwal, & Prestigiacomo, 2012). Similarly, simulations are also proved as effective educational tools in driving schools and flight simulators, where students learn to interact, collaborate and lead in a simulated world without taking any real risk (Parker, Shoop, Coutermarsh, Wesson, & Stanley, 2009; Petrakou, 2010; Wang, 2011b).

Overall, simulations are found to provide positive learning outcomes across all three of Bloom's domains of cognitive, affective, and psychomotor learning (Hsu, 1989). Indeed, previous research reveals that simulations enable learners to cognitively, affectively and behaviourally processes knowledge, skills and/or attitudes (Agnello, Pikas, Agnello, & Pikas, 2011). Cognitive learning is reflected on the learners' understanding of basic facts and concepts. Simulations also make learners to perceive that they learn, to hold positive attitudes and satisfaction, which in turn reflects good learning outcomes on affective learning. Simulations also positively influence behavioural learning, because by engaging learners in simulated tasks and requiring them to formulate, assess, select and correct decisions or actions, (Agnello et al., 2011) they improve their problem analysis and solving, as well as decision-making and collaboration skills (Hermens & Clarke, 2009).

Table 1
Educational advantages and disadvantages of simulators.

No	Simulators in education	Studies
	Major advantages	
1	It allows users to experience and interact with an environment similar to the real world	(Matveevskii & Gravenstein, 2008; Ruggeroni, 2001)
2	Ability to create different scenarios for training purposes without risking any actual economic or human losses	(Farrell, 2005; Matveevskii & Gravenstein, 2008; Parker et al., 2009; Petrakou, 2010; Phillips & Ponsky, 2011; Sadideen et al., 2012; Schmitt et al., 2012; Schulzke, 2013; Stefanidis et al., 2006; Wang, 2011b)
3	It upgrades students' capabilities in: team-working and collaboration; using Information and Communication Technology; critical and creative thinking	(Borrajo et al., 2010; Grundman et al., 2000; Holzinger, Kickmeier-Rust, Wasserthurer, & Hessinger, 2009; Stefanidis et al., 2006)
4	Increased students' response and reaction to problem-solving tasks; improved usability and accessibility. Simulations facilitate learning processes, as they provide easy to use interfaces (e.g. menus design, graphical interfaces and menus) Simulators can be accessible through the Internet enabling students to use them through any device, any place and any time	(Borrajo et al., 2010)
	Major disadvantages	
1	Technical limitations on processing power, image resolution and communication bandwidth	(Byrne, Heavey, & Byrne, 2010; Holzinger et al., 2009; Jafer, Liu, & Wainer, 2013; Parker et al., 2009)
2	Lack of realism; in a real environment, people can feel and taste, while in simulators this cannot happen. For instance, people usually sweat in stressful situations and adopt various body language expressions, but these signs are not visible and cannot be sensed in simulated decision-making environments.	(Sadideen et al., 2012)
3	Instructor's presence could heavily influence and bias the types of interactions and production	(Oliveira, Tinoca, & Pereira, 2011; Qiu & McDougall, 2013; Talebian, Mohammadi, & Rezvanfar, 2014)
4	Students have time flexibility to think and react in problem-based scenarios: there is no stress for quick thinking as in real situations	(Byrne et al., 2010)
5	Difficult to measure the learning benefits of simulations, and isolate and measure their impacts on students' learning processes and outcomes	(Talebian et al., 2014)

2.2. Pedagogical principles and design elements of simulators

Business simulations usually require students to plan, coordinate and manage a virtual business. Thus, experiential, role playing and problem based learning (Miller, 2004; Hsu, 1989; Ruben, 1999) had been the dominant learning theories influencing the design of simulations. Simulations may require students to work independently, but most of them demand students to work in teams. This is because students can also learn by developing knowledge and understanding from their experiences and interactions with others through a process of (collaborative) social constructivism (Boulos, Maramba, & Wheeler, 2006; Sigala, 2004; Sigala, 2002). Students are also interested in learning through technology if they are simultaneously edutained with online interactions and collaboration (Sigala, 2004). Chaparro-Peláez, Iglesias-Pradas, Pascual-Miguel, and Hernández-Garcia (2013) also found that collaborative learning is one of the most important factors determining the learning benefits of simulations and the performance outcomes achieved by students. Simulations provide fertile opportunities for constructivist/collaborative learning, because they provide multiple representations of reality, attempt to represent the natural complexity of the real world and attempt to replicate authentic tasks (Lainema & Makkonen, 2003). In order to enhance the students' interaction, collaboration, interest (and so, engagement) in simulated words and tasks, simulations generally use games and avatars as their typical design features (Vogel et al., 2006).

Games are heavily used in educational simulations, because they can significantly enhance the students' interest, participation in educational tasks and learning outcomes (Ruben, 1999; Hsu, 1989; Zichermann & Cunningham, 2011). Indeed, gamified educational environments (i.e. the use of game mechanics and rules) have an enormous potential and application in education, because gamification is found to direct/manipulate the users' behaviour and increase their motivation, level of engagement and flow experience (Sigala, in press; Wu, Chiou, Kao, & Hu, 2012). In tourism education, playing games and debating/solving tourism problems are also found to enhance students' learning outcomes (Ghany & Latif, 2012; Feinstein & Parks, 2002).

Simulated worlds are representational-rich environments whereby learners' interaction and collaboration with one another are facilitated though their avatars. Gerhard, Moore, and Hobbs (2004) defined an avatar as a *"user embodiment in a collaborative virtual environment"*. Through avatars, the learners acquire the sense of "being there" and are embedded in virtual worlds by using telepresence or teleporting (Sigala, 2012). A significant feature of these virtual worlds is that they allow the users to engage in virtually designed situations, which could be hard to replicate in real life, while at the same time, users can still retain their real behavior in the form of avatars (Mayrath, Traphagan, Heikes, & Trivedi, 2011; Kozlov & Johansen, 2010). Recently, technology advances have created a new understanding of virtual "interactive computer-simulation" that empowers the users to create both existing and non-existing avatars in order to interact with each other. For example, Second Life has been the most famous and popular three dimensional (3-D) online virtual world that enables users to make a simulated and rich representation of various real worlds and to interact with each other by creating their own existing and non-existing avatars (i.e. avatars based on the user' s

fantasy) (Sigala, 2012). Indeed, numerous universities had also used Second Life for creating various educational applications and simulations (Hsu, 2012).

E-learning is widely recognised as a tool that it can significantly enhance the learners' skills and knowledge (Sigala, 2004; Sigala, 2013), and so, it has been increasingly used as an important component for enhancing the design of educational simulators (Pituch and Lee, 2006; Vogel et al., 2006). By combining multimedia technologies, with the internet and nowadays, the social media, e-learning can significantly improve the quality of the learning processes and outcomes by facilitating access to resources, enabling users' interactions and collaboration, as well as empowering users to search, create, share, disseminate and discuss content in innovative, cost effective, and time/place flexible ways (Sigala, 2007). Furthermore, e-learning allows participant to experience multicultural diversity and teamwork by interacting with people from different cultural and professional backgrounds (Sigala, 2007). Thus, many simulators are nowadays available online and integrate e-learning features in order to support and facilitate learners' interaction and co-operation and provide more opportunities for collaborative constructivism learning (Vogel et al., 2006). In this vein, the integration of e-learning with educational simulators can be very beneficial, since a key function of the simulated worlds is to allow the users to experience and interact with other learners and an environment that is very similar to the real world. In addition, an e-learning platform can nicely complement an educational simulator in order to provide the users with the necessary information, decision-support and guidance on how to use and engage with the simulation's tasks. This in turn can significantly increase the users' learning progress rate, performance and interaction within the simulated world (Coffey & Anderson, 2006).

The design of the students' activity in simulations usually adopts a problem-based scenario planning approach, but scenario planning has to be adapted to the context and 'problem' of each simulated environment (Batista & Cornachione, 2005). Scenario planning for enhancing the learners' decision-making skills is also very compatible and nicely integrates with problem-based learning theories that most of the simulations use for their design (Miller, 2004). Scenario planning was first introduced by Pierre Wack and Edward Newland (Meissner & Wulf, 2013; Phelps, Chan, & Kapsalis, 2001) with the aim to help learners develop their future planning skills, which are necessary for avoiding decision errors in complex management processes (Chermack, 2004) and for broadening the thinking spectrum of managers by enabling them to identify, design and test different scenario options. Scenario planning enables simulator users to consider different situations (each one with different decision outcomes), which the users may have not previously considered or identified; thus, scenario planning can significantly improve the quality of decision-making processes (Soll & Klayman, 2004). Simulated scenario planning can also help group thinking in complex and dynamic environments (Wright, Cairns, & Goodwin, 2009), since users can use it for testing different incidents (Meissner & Wulf, 2013) without taking any actual risk and/or cost (van der Heijden, 2005). Consequently, scenario planning is used in simulations, because it can support users with problem conceptualisation and understanding, as well as it can increase the effectiveness of their decision-making process and outcomes (Korte & Chermack, 2007). Moreover, scenario planning can enhance the users' apprehension of the dynamic environment and it can also be a very important tool for teaching strategic management and planning (Chermack, 2004; Meissner & Wulf, 2013; Foster, 2011).

2.3. Simulations and gaming in business and tourism/hospitality education

Several simulations and gaming applications have already been developed in business and tourism/hospitality education (Kendall & Harrington, 2003; Martin & McEvoy, 2003). A study conducted by KZero (2011) showed that at least 500 virtual worlds have been created, a number that is expected to rise to approximately 900 by the end of 2012 when the forecasted revenue should reach USD 6 billion. The following paragraphs describe the design and educational goals of some of the major business (gaming) simulations in business and tourism/hospitality education.

"Ja Titan" (Junior Achievement Titan) which was initially developed to boost high school students' achievement is found as a useful pedagogical tool for all levels of education (Borrajo et al., 2010). It is a game simulator that requires the students to take strategic decisions on pricing, marketing and capital investment on a simulated global business operating environment under an intense competitive marketplace (i.e. a simulation of a real business context). The students' success or failure depends on their ability to take the right and the most appropriate decisions after understanding and assessing the contextual and competitive factors of the simulated global business environment.

SIMBA (SIMulation in Business Administration) is a game simulator suitable for both classroom teaching and distance learning (Table 2). The main feature of SIMBA is its ability to create simulated business events that are very similar to reality by using pragmatic variables and simulating their inter-relationships. The tool takes into account the main functional areas of a business and develops a scenario based on the real business life. The level of difficulty can be adjusted depending on the users' familiarity with the simulator and their business knowledge. In order to improve the students' skills and performance, the simulator is also now available on the Internet so, that the users can compete amongst themselves on real time and more interactively (Borrajo et al., 2010).

SBELP (Scenario-based e-learning products) is also a game simulator designed to simulate the international supply chain network. This simulation tool analyses the supply chain by emulating the logistics and supply chain operations of various goods such as, machines, electronic devices and other industrial products. The students' performance and learning outcomes are assessed based on their ability to analyse and manage the inventory, back orders, and transportation costs (Siddiqui, Khan, & Akhtar, 2008).

The Hotel Business Management Training Simulation (HOTS) is a game simulator designed to develop the management competencies and skills required from students wishing to get an employment and career in the hospitality industry (Ineson, Jung, Hains, & Kim, 2013). The tool allows the participants to enhance their knowledge and managerial skills on

Table 2
Major simulators related to (hospitality and tourism) education.

No	Simulator name	Simulated environment, learning aims and activities	Source
1	TouriSim – A Computer-based Simulation Game	Plan, design and develop a new hospitality property	(Toomey, Priestly, Norman, & O'Mahony, 1998)
2	"Ja Titan" (Junior Achievement Titan)	Global business management related to marketing, pricing and capital investment within a simulated competitive environment	(Borrajo et al., 2010)
3	SIMBA (SIMulation in Business Administration)	Increased user interactivity and competition through the Internet. Appropriate for classroom teaching and distance learning	(Borrajo et al., 2010)
4	SBELP (Scenario-based e-learning products)	A simulation of an international supply chain network for understanding, analysing and managing inventor, back orders and transportation costs	(Siddiqui et al., 2008)
5	HOTS 2013 (Hotel Business Management Training Simulation)	Develop the strategy and operate an hotel property within a competitive environment	(Ineson et al., 2013; Martin & McEvoy, 2003)
6	Airline Yield Management	Understanding and application of revenue management in an airline context	(Larson, 2002)

service management by familiarising them and requiring them to take decisions for addressing issues related to finance, business strategy, revenue management, operations as well as marketing and sales over a long period of time. The HOTS is a virtual management training game that assists the users to develop important skills for running hotels such as, problem identification, problem prioritization and problem solving skills. Furthermore, it helps the users to develop profound understanding regarding the cause and effect relationships between performance measures and the managerial decisions causing them. The design of HOTS also incorporates a game element in order to enhance the students' abilities and understanding of business competition. Specifically, the HOTS divides the participants into small students' groups and each group is responsible for running an hotel property (with a capacity of 500 rooms) under a very competitive virtual marketplace. The groups compete among them, since their virtual hotels are located in the same geographical area. In this vein, the students' groups have to compete with each other in order to attract more customers than the other neighbourhood competing hotels (students' groups) and achieve the greatest possible revenue.

The Airline Yield Management game simulator is developed by the team of Prof. Richard Larson. This tool aims to help students obtain a deep understanding and practical skills of the concept and implementation of revenue management in an airline context. Students using this tool are assigned the responsibility to manage the booking process of the coach cabin of a specific flight (i.e. the 3 p.m. flight from Boston to New York) (Larson, 2002).

3. Event management: importance, learning aims and skills

Events are understood as unique experiences different from daily life (Berridge, 2007), while event management is considered as the practice and the way an organisation manages an event (Soteriades & Dimou, 2011). Event management requires the management of numerous processes before, during and after the implementation of the event, while successful event operations require managers to handle several critical issues including marketing, ticketing, budgeting, transportation/logistics, human resources, facilities and attendees management, public relations, time management and risk management (Kose, Tokay Argan, & Argan, 2011; Getz, 2008; Lamb, 2006; Hales & Nightingale, 1986). Event management should also be considered as a value chain management connecting and requiring the co-ordination of various suppliers and business partners, such as: information and booking services, accommodation, venues, catering, transportation, logistics, leisure activities and entertainment, and insurance companies (Soteriades & Dimou, 2011). Because of the complexity, particularities of event operations and the professionalism required to handle events, event management professionals are needed to effectively run an event; as Arcodia and Reid (2005) stated *"as the number of events increase, there is a growing realization about the continuing need to develop event management professionals who are able to create, organize, and manage events"*.

Events have become a critical success factor for both destinations and tourism firms alike. Events benefit destinations in various ways, such as increasing number of visitors, addressing demand seasonality, improving destination development and enhancing destination image (Morse, 2001; Higham & Hinch, 2002). As competition intensifies, events have also become a critical differentiator factor determining the survival and competitiveness of various tourism firms such as, theme parks, holiday resorts, cruise ships, casinos. Consequently, events management is nowadays a vital component of tourism education, while many universities have also developed dedicated programmes specialising in events management as well.

Indeed, event management education is not a new concept and its importance in tourism, leisure and hospitality continually increases, which is also evident based on the increased number of students enroled in event management courses. The demand for these courses is also fuelled by the belief that event management education can significantly help students in getting a job and a prosperous career. Despite the importance of event management, there is limited research about the skills and the knowledge required from graduates by the events industry. For example, an exploratory study by Junek, Lockstone, and Mair (2009) revealed that communication is one of the most important skills followed by problem-solving ability and stress management.

Table 3 lists the events management courses (along with their learning aims) provided by various educational institutions worldwide. Information was collected online by searching the institutions' website. Most of the examined courses aim to develop the students' skills and abilities related to planning, budgeting, and events operations. As secondary objectives, the courses state

Table 3
Learning aims and skills development of event management courses.

Learning aims and skills	University	Type	Country	Website
Planning, budgeting, and implementing events	Iowa State University	Bachelor of Science with a major in event management	USA	http://catalogue.iastate.edu/collegeofhumansciences/eventmanagement/text
	Victoria University	Bachelor of Business (Event Management)	Australia	http://www.vu.edu.au/courses/bachelor-of-business-event-management-bbus-bspevt
	Humber	Postgraduate	Canada	http://www.humber.ca/program/event-management
	Alpine Center	Distance Learning Events Management	Switzerland	http://www.swissalpinecenter.com
	Irish Academy of Public Relations	Diploma in Event Management	Ireland	http://www.irishacademy.com/ie/online-courses/event-management-courses/diploma-event-management
	International College of Management, Sydney	Bachelor of Events Management	Australia	http://www.icms.edu.au/courses/undergraduate/course-description/diplomas.html
	Brentwood Open Learning College	Diploma in Event Management	UK	http://www.bolc.co.uk/Diploma-in-Event-Management-.html
	Niagara College	Graduate program in Event management	Canada	http://www.niagaracollege.ca/content/Programs/HospitalityandTourism/EventManagement.aspx
	University of Gothenburg	Course	Sweden	http://gul.gu.se/public/pp/public_file_archive/archive.html?publishedItemId=23091837&courseId=56017&fileId=21450849
Excel skills on event management	Singhania University	Post Graduate Diploma in Event Management	India	http://www.singhaniauniversity.co.in
	Victoria University	Bachelor of Business (Event Management)	Australia	http://www.vu.edu.au/courses/bachelor-of-business-event-management-bbus-bspevt
	University of Brighton	International Event Management BA(Hons)	UK	http://www.brighton.ac.uk/courses/study/international-event-management-ba-honsc
	Leeds Metropolitan University	M.Sc. International Events Management	UK	http://prospectus.leedsmet.ac.uk/main/course.htm?ban=MSIEM
Demonstrate leadership characteristics	Iowa State University	Bachelor of Science with a major in event management	USA	http://catalogue.iastate.edu/collegeofhumansciences/eventmanagement/text
Decision making	Iowa State University	Bachelor of Science with a major in event management	USA	http://catalogue.iastate.edu/collegeofhumansciences/eventmanagement/text
Negotiation and interaction skills	La Trobe university	Undergraduate course	Australia	http://www.latrobe.edu.au/courses/event-management
	Victoria University	Bachelor of Business (Event Management)	Australia	http://www.vu.edu.au/courses/bachelor-of-business-event-management-bbus-bspevt
Critical thinking, communication and human interaction	La Trobe university	Undergraduate course	Australia	http://www.latrobe.edu.au/courses/event-management
	Milwaukee Area Technical College	Meeting and Event Management Degree	USA	http://www.matc.edu/student/offerings/2012–2013/degrees/meeting_event_management.cfm
Practical Event Management skills	Stratford University	Event Management Program	USA	http://www.stratford.edu/event-management
	Victoria University	Bachelor of Business (Event Management)	Australia	http://www.vu.edu.au/courses/bachelor-of-business-event-management-bbus-bspevt
	Waikato Institute of Technology	Graduate Diploma in Practical Event Management	New Zealand	http://www.wintec.ac.nz/courses/graduate-diploma/practical-event-management.aspx
	Fitzwilliam Institute Group	Diploma in Event Management	Australia	http://www.fitzwilliaminstitutegroup.com.au/event_management_courses_perth_evening_diploma
	Leeds Metropolitan University	M.Sc. International Events Management	UK	http://prospectus.leedsmet.ac.uk/main/course.htm?ban=MSIEM

that they aim to assist students to develop skills: on event management; leadership; decision-making; negotiation and interaction skills. Furthermore, event management curricula also aim to develop the students' critical thinking, communication and practical skills in managing event operations.

To better support the development of these skills, most of the courses have also integrated a practical component in their curriculum. For example, students are required to participate in the design, organisation, implementation and evaluation of a real-life event. However, participation in a real-life event is not always possible and guaranteed, which results in students debating such concepts only theoretical on paper/course projects. In addition, the ideal pedagogical approach for teaching events management would be to blend a lecture based learning mode (for explaining and providing the students with the theoretical foundation and concepts) with the use of a simulator. And only after students having participated, experimented and obtained a better understanding of a simulated event management world, to place them within a real working environment.

However, as it is very difficult to develop these event management skills solely through a theory-based learning model, the development and the use of an event management simulator is critically urgent. To that end, the following section analyses the

framework for designing the simulation platform of event management educational tool. The design of the simulation is based on the skills that event management courses aim to develop and they are also required by events management graduates.

4. Design framework of a simulation platform for events management

4.1. Pedagogical principles for designing the framework of the Events Management Training Simulation (EMTS)

The educational aims of the EMTS are to familiarise and expose students to the operations and managerial tasks of an event manager. In addition, the EMTS aims to help student develop and excel their decision-making skills and knowledge for effectively designing and implementing events in a highly competitive and demanding environment (Fig. 1). To that end, the design of the EMTS has adopted a problem-based scenario planning approach by simulating the decision-making context and processes as well as the operational activities required for designing and implementing an event (Batista & Cornachione, 2005; Korte & Chermack, 2007). The EMTS also incorporates game elements in order to simulate a competitive business environment that can better stimulate the students' interest and participation in the simulated tasks as well as provide them with a more authentic experience of an events management context (Ruben, 1999; Hsu, 1989).

The design of the event management simulator is also based on the tenets of cyclical and iconic design. Cyclical design occurs when participants make choices, take action, get the results, draw a feedback and then, based on their outcomes proceed to take further actions (Chen & Downing, 2006; O'Halloran & Deale, 2010). Iconic design refers to the situation in which the simulator is an actual replica of a real system (O'Halloran & Deale, 2010).

The proposed EMTS simulator has also adopted some design elements from the TouriSim and HOTS simulators, but it also differs from them in various ways.

The HOTS is a competition orientated computer simulation game whereby participants have to manage a hotel and take crucial strategic and operational decisions about the future of the company operating within a highly competitive environment (O'Halloran & Deale, 2010; Ineson et al., 2013; Chen & Downing, 2006; Martin & McEvoy, 2003). The students have to define the hotel's target audience and performance goals, and then, tailor the hotel's strategy and decision-making to better reach them. Decision making refers to various issues such as, the company's product mix, the pricing strategies, advertising, staffing, revenue management and capital expenditure. The development of the EMTS simulation follows the same rational, as it is designed to create a competitive business environment amongst the students' groups, in which the students can develop the required competencies and managerial skills for reacting to the decisions taken by the competitors.

Similar to the TouriSim simulator whereby the students have to plan, design and develop a new hospitality facility, the EMTS requires the students to plan, design and develop a sporting event. However, although the TouriSim simply provides a manual that helps the students by providing them with appropriate background information of the hospitality industry, the design of the EMTS

Fig. 1. Proposed home page of the Event Management Training Simulator.

also includes an e-learning platform in order to guide and help the students in decision-making by providing them with valuable information and feedback about the appropriateness and the expected outcomes of their decision-making choices. Thus, although both simulators use the e-learning as a supportive tool to their simulated tasks (e.g. Vogel et al., 2006), the content and aims of the e-learning platform differ significantly amongst the two simulators. For the EMTS, the e-learning platform consists a vital supportive tool to the scenario planning simulator and the students' decision making processes. By integrating the e-learning platform with the EMTS, the e-learning platform provides the students with the required information and feedback so, that they can easily and effectively accomplish the required business management tasks. Specifically, the EMTS and the e-learning platform adopt a scaffolding pedagogical design (Sigala & Christou, 2003) by breaking down the event management scenario into many inter-linked management tasks and decision-making activities. The students are provided with the breakdown structure and the sequence of the required tasks, while each task is linked with the related learning information and feedback mechanism provided on the e-learning platform. In this way, students requiring support for completing each task can refer to the learning material available on the e-learning platform. Overall, by scaffolding the simulated event management activities and their related decision-making tasks, the students are better guided and get more support in understanding how to solve real-life event management problems (Sigala, 2013), while they also get good skills' training opportunities and experience for learning how to rapidly respond and address various business challenges within a dynamic, highly competitive and complex industry environment.

Fig. 2 provides the overall structure of the above mentioned design elements of the EMTS. The design of the EMTS is based on a simulated management training game in which participants are divided into teams and assigned the task of organising events within a competitive marketplace. The framework consists of two major parts: the first part refers to the content and the activity structure of a Simulated Event Management Training Game where the students are engaged with practical business activities of a virtual events management gamified environment; the second part relates to an interactive e-learning platform providing students with valuable theoretical knowledge and guidelines that can support their decision-making processes in the game activities. After taking decisions, feedback is also provided to all students' teams regarding the results of their decision-choices, so that they can see how theirs and their competitors' actions impact the performance of their event management businesses. By enabling the students to design and manage events within a competitive and interactive simulated business environment (that does not however imply taking any real business or financial risk), the platform aims to equip the students with the necessary decision-making skills and specialized industry knowledge so, that they become successful events managers.
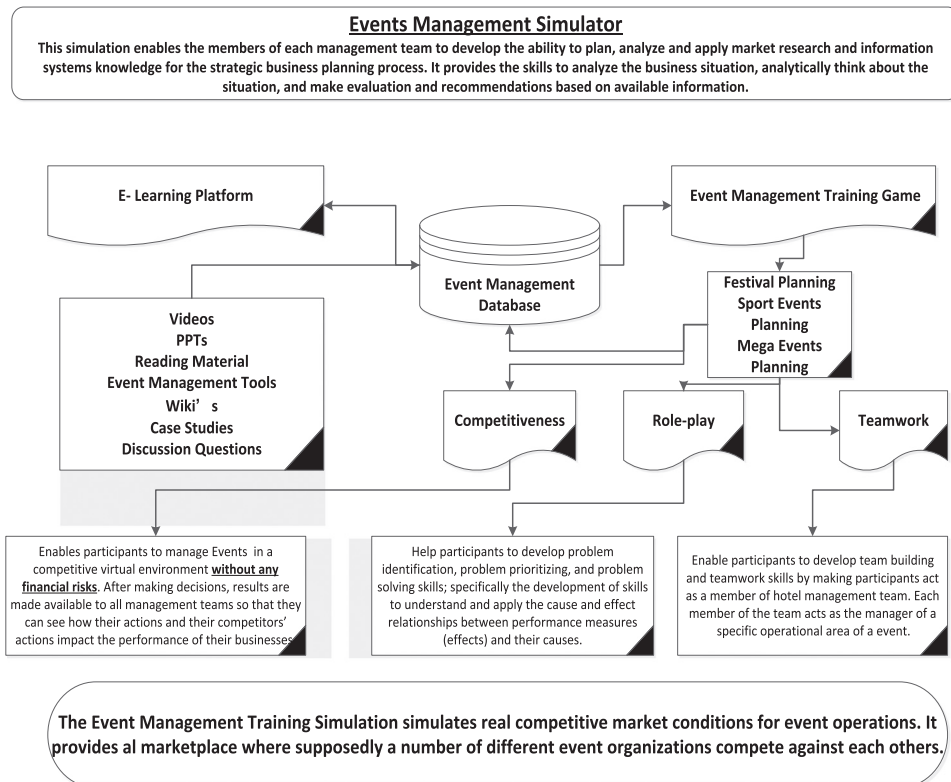

Fig. 2. Events Management Training Simulator: design elements.

The following section describes the design elements of the EMTS with much more details.

4.2. Design elements of the Events Management Training Simulator (EMTS)

4.2.1. Scenario planning and students' roles

The business scenario of the EMTS is described as follows. Every EMTS user receives a user name and password for accessing and participating in the simulated platform as a staff member of Sfendamos S.A., which is a civic non-profit company responsible for the organisation of the Sfendami Mountain Festival (S.F.M – www.sfendami.com). Upon registration, every user gets an avatar representing his position (e.g. marketing, finance and operations department) and role (e.g. manager, operational staff) within the event organising firm. The allocation of positions and managerial roles to the users' is matched to the students' year of study, so, that more mature students can get more senior positions and responsibilities/tasks (e.g. project managers). Overall, students join different event management functional/departmental teams, in which one user is assigned as the functional manager.

4.2.2. E-learning platform: information provision and students' support

When registering, the users immediately receive information about the event that they have to organise and implement. The event to be organised is a two-day annual festival that is always held in mid-April. It takes place in Sfendami Pierias (Greece), which is a village built at an altitude of 160 m. and only 25 kms away from the capital of Pieria, namely Katerini. The local population is small (935 residents, 2011 census), and agriculture (e.g. tobacco cultivation, olives, wheat and breeding livestock) represents the major activity of the residents. The festival started in 2007 and since then, the festival has been repeated annually. The aim of the festival is to promote no-widely popular sports to the public. Thus, the first edition of the festival focused on the organisation of mountain bike races, while since 2008, the festival also includes mountain running races.

Students can also access the e-learning platform from where they can get useful material and resources related to event and project management (e.g. videos, power points and management tools, such as SWOT frameworks, risk management calculators and project management tools). For example, students would be given access to the Project Management Body of Knowledge (PMBoK) in order to manage their event. The PMBoK provides the students with all the necessary documentation and steps for managing a real project, as well as it guides them on how to co-operate with other staff for completing these project management tasks.

4.2.3. Training game

The Events Management Training Simulation (EMTS) is built around an event management training game whereby participants are allocated into the functional departments of an event organising firm and assigned the management roles and responsibilities for managing an event within a competitive simulated marketplace. Depending on their position/department, students have the task of completing and taking decisions on various operational issues, such as: capital investment; operating expenditures; marketing expenditures; event advertising; event risk management; and ticketing/pricing strategies. To carry out their tasks, students will have to co-operate and synchronise their activities with the decisions of students working on other departments. Thus, by playing their functional role, students have to simultaneously collaborative as well as compete with students assigned different roles within the organisation. In other words, participation in the training game implies both competition amongst students (i.e. all of them have to fight for the limited resources of the firm, e.g. budget, time, resources etc.) as well as team-work amongst them (e.g. the marketing strategy and plan of the marketing department would depend on the scheduling of the event operations and the design of the event activities). In addition, the training game facilitates a healthy competition amongst students and their functional/department teams, as students and teams are evaluated and get scores based on their performance to complete their tasks within appropriate time frames and with appropriate quality output.

Students are presented with and they have to complete a business task every two weeks. The sequence of the business tasks to be assigned to the students follows the same sequence of the tasks required for managing events during their whole lifecycle (i.e. pre-event, during the event and after the event management tasks). For example, business tasks can be developed along the following topics/themes:

- Pre-event management stage: e.g. design of the event concept, activities and programme; event planning; event budgeting; search/contracting with sponsors; plan of marketing strategies
- During the event management stage: e.g. implementation and operational issues; customer management & services; risk management
- Post-event management stage: e.g. evaluation of event impacts; collection and analysis of feedback; communication to the event stakeholders; management of event's legacies

During the training game, educators can also challenge students and require them to revise and update their decisions by presenting them with various unexpected events, problems and challenges such as: budget cuts by sponsors, last minute cancelation of a event performer/speaker, bad weather conditions, delays in receiving equipment and supplies, customers arriving late to the event. The introduction of such events into the training game can make the simulation environment much more

realistic in relation to the real industry world, as well as enhance the interest but also the decision-making capabilities of the students.

Thus, overall, the training game aims to enhance the students' competences by supporting three core pedagogical features:

- Competiveness: by playing the game, students have to address various competitive forces coming from the internal and the external environment of the event organising firm. The students are provided with information about the actions and the impacts/feedback of all other students' teams, so that they can later revisit and revise their actions and make them more competitive.
- Role play: students assume functional positions and responsibilities within an event organising firm and they are assigned with various management tasks that they overall aim to contribute to the successful design and implementation of an event. Furthermore, by selecting and implementing management actions (causes) and viewing/getting feedback on the latters' performance results and impacts (effects), the simulator helps the students to develop their skills in: problem identification, problem understanding/definition, problem prioritising, and problem solving.
- Team work: students have to collaborate with other students belonging in the same as well as different functional/ departmental teams. By requiring and supporting student cooperation, the simulator aims to improve the students' abilities and skills in: team-building and team-working; inter-personal co-operation and negotiation.

4.2.4. Students' feedback and evaluation

Students will be evaluated based on the speed, the quality, the justification/argumentation and appropriateness of their management decisions and actions for completing every assigned task. Thus, students' feedback and evaluation would be provided on a regular basis, so that students can use it for improving their decision-making processes and actions in the subsequent tasks.

All students will have access to the actions/decisions and the feedback given to all other students/functional team. This is important so that the students can get a more holistic approach and overview of the performance of the firm and the management of the event, as well as understand how their actions impact on the performance of the whole business/event.

4.3. Educational benefits of the EMTS

According to Arcodia and Reid (2005) professionals in event management require specialised knowledge and skills for effectively running an event and responding to unpredicted situations and challenges. Because of that, simulators can help students studying event management to gain important knowledge, practical training and experience by participating in a problem-based event management scenario within a simulated industry environment (Farrell, 2005; Matveevskii & Gravenstein, 2008; Parker et al., 2009; Petrakou, 2010; Phillips & Ponsky, 2011; Sadideen, Hamaoui, Saadeddin, & Kneebone, 2012; Schmitt et al., 2012; Schulzke, 2013; Stefanidis et al., 2006; Wang, 2011b). In addition, the proposed EMTS has been designed in such a way so that its elements and pedagogical features can offer valuable educational opportunities and benefits to its users students, because:

- it exposes students and requires them to act and interact/collaborate with others and within an industry environment similar to the real world; and
- it guides and supports students in decision-making processes and outcomes by: scaffolding the problem based scenario of event management in several well sequenced management tasks; assessing and providing students with feedback in a regular basis so, that they can better understand and apply the cause and effect relationships between performance measures (effects) and their causes (management actions); and integrating an e-learning platform to management tasks for supporting students' decision-making processes.

Analytically, the EMTS can help students develop the following skills and competencies that are also nowadays required in the event industry (Table 2).

The problem-based scenario planning of the EMTS can help students improve their abilities and skills in managing events throughout all their whole lifecycle (i.e. from event design and planning to event operations and evaluation). The EMTS also assists students in developing their decision-making and strategic management skills by requiring them to design and justify management actions for addressing various business tasks. This is because for achieving the latter, the students have to carry out tasks such as: business situation analysis; situation analytical thinking; evaluation of alternative managerial choices and selection/justification of management actions based on available information. Furthermore, the role play feature of the EMTS can also help students to enhance their abilities in: problem identification, problem understanding and conceptualisation, problem prioritising and problem solving.

The event management simulation model and specifically, its training game component also aim to enhance the students' abilities: to survive and thrive within a competitive environment; to excel their team working skills and role play capabilities; and to develop their leadership, negotiation, communication and interaction skills. For example, the need to cooperate and debate with other students (team members) the nature and the available and appropriate solutions to the various business tasks enable

students to improve their communication and negotiation skills. The training game also develops the students critical thinking and analytical skills, since it requires them to: analyse and continually reassess the business situation; critically evaluate the situation and the problems; identify and evaluate alternative actions/solutions; and justify and make recommendations based on available information and their analyses. In this vein,

5. Conclusions and implications for future research

The main purpose of this paper was to develop a conceptual framework for designing an event management simulator. To that end, the paper reviewed and applied the theoretical principles and pedagogical tenets that had been previously used for designing business educational simulation tools. The simulator is based on a problem-based scenario for designing a training game that aims to expose the students and enhancing their managerial skills by requiring them to assume managerial roles, responsibilities and tasks in a highly competitive simulated marketplace. The elements of the simulator are designed in such a way in order to enable its users to develop the skills and the knowledge required nowadays from staff working in the events' industry.

However, as the framework is only a conceptual one, future studies should aim to first implement and run the simulation with various students' audiences for testing the effectiveness and the ability of the simulator to achieve its stated educational aims. In addition, studies focusing on investigating the perceptions of the educators and the students regarding the usability as well as the perceived usefulness of this simulator are also critically important for the future improvement of the platform. Here, the level of competition will be intensified in this mode. Finally, future studies can also examine the further enhancement of the design and the scenario planning of the simulation tool by incorporating: new technologies (e.g. social networks and media, augmented reality and mobile devices); more stakeholders (e.g. not only students but also professionals and event participants) and/or event organisers (competing for the same events) into the simulated application. The latter additions can create a virtual environment that is more similar to the real competitive and dynamic marketplace. Future studies should also examine and measure the educational effectiveness of various problem-based scenarios and their impacts on specific learning outcomes and skills development.

References

Agnello, V., Pikas, B., Agnello, A. J., & Pikas, A. (2011). Today's learner, preferences in teaching techniques. *American Journal of Business Education*, 4, 1–9.
Arcodia, C., & Reid, S. (2005). Event management associations and the provision of services. *Journal of Convention & Event Tourism*, 6, 5–25.
Batista, I. V. C., & Cornachione, E. B. (2005). Learning styles influences on satisfaction and perceived learning: analysis of an online business game. *Learning styles influences on satisfaction and perceived learning: Analysis of an online business game*, 32, 22–30.
Berridge, G. (2007). *Events Design and Experience*. Oxford: Elsevier.
Borrajo, F., Bueno, Y., De Pablo, I., Santos, B., Fernández, F., & García, J., et al. (2010). SIMBA: a simulator for business education and research. *Decision Support Systems*, 48, 498–506.
Boulos, M. N. K., Maramba, I., & Wheeler, S. (2006). Wikis, blogs and podcasts: a new generation of Webbased tools for virtual collaborative clinical practice and education. *BMC Medical Education*, 6.
Buhalis, D., & Law, R. (2008). Progress in information technology and tourism management: 20 years on and 10 years after the Internet—The state of eTourism research. *Tourism Management*, 29, 609–623.
Byrne, J., Heavey, C., & Byrne, P. J. (2010). A review of Web-based simulation and supporting tools. *Simulation Modelling Practice and Theory*, 18, 253–276.
Chaparro-Peláez, J., Iglesias-Pradas, S., Pascual-Miguel, F. J., & Hernández-Garcia, Á. (2013). Factors affecting perceived learning of engineering students in problem based learning supported by business simulation. *Interactive Learning Experiences*, 21, 244–262.
Chen, M., & Downing, L. (2006). Using simulations to enhance students' learning in management accounting. *Journal of Hospitality & Tourism Education*, 18, 27–32.
Chermack, T. J. (2004). Improving decision-making with scenario planning. *Futures*, 36, 295–309.
Chittaro, L., & Ranon, R. (2007). Web3D technologies in learning, education and training: motivations, issues, opportunities. *Computers & Education*, 49, 3–18.
Coffey, B. S., & Anderson, S. A. (2006). The students' view of a business simulation: perceived value of the learning experience. *Journal of Strategic Management Education*, 3, 151–168.
Cronan, T. P., & Douglas, D. E. (2012). A student ERP simulation game: a longitudinal study. *The Journal of Computer Information Systems*, 53, 3–13.
Cronan, T. P., Léger, P.-M., Robert, J., Babin, G., & Charland, P. (2012). Comparing objective measures and perceptions of cognitive learning in an ERP simulation game: a game research note. *Simulation & Games*, 43, 461–480.
Farrell, C. (2005). Perceived effectiveness of simulations in international business pedagogy. *Journal of Teaching in International Business*, 16, 71–88.
Feinstein, A. H., & Parks, S. J. (2002). The use of simulation in hospitality as an analytic tool and instructional system: a review of the literature. *Journal of Hospitality & Tourism Research*, 26, 396–421.
Ferreira, R. R. (1997). Measuring student improvement in a hospitality computer simulation. *Journal of Hospitality & Tourism Education*, 9, 58–61.
Foster, A. N. (2011). The process of learning in a simulation strategy game: disciplinary knowledge construction. *Journal of Educational Computing Research*, 45, 1–27.
Gerhard, M., Moore, D., & Hobbs, D. (2004). Embodiment and copresence in collaborative interfaces. *International Journal of Human-Computer Studies*, 61, 453–480.
Getz, D. (2008). Event tourism: definition, evolution, and research. *Tourism Management*, 29, 403–428.
Ghany, S., & Latif, M. (2012). English language preparation of tourism and hospitality under graduates in Egypt: does it meet their future workplace requirements?. *Journal of Hospitality,Leisure,Sport &Tourism Education*, 11, 93–100.
Grundman, J. A., Wigton, R. S., & Nickol, D. (2000). A controlled trial of an interactive, web-based virtual reality program for teaching physical diagnosis skills to medical students. *Academic Medicine*, 75, 47–49.
Guttentag, D. A. (2010). Virtual reality: applications and implications for tourism. *Tourism Management*, 31, 637–651.
Hales, C., & Nightingale, N. (1986). What are unit managers supposed to do? A contingent methodology for investing managerial role requirements. *International Journal of Hospitality Management*, 5, 3–11.
Hermens, A., & Clarke, E. (2009). Integrating blended teaching and learning to enhance graduate attributes. *Education+Training*, 51, 476–490.
Higham, J., & Hinch, T. (2002). Tourism, sport and seasons: the challenges and potentials of overcoming seasonality in the sport and tourism sectors. *Tourism Management*, 23, 175–185.

Holzinger, A., Kickmeier-Rust, M. D., Wassertheurer, S., & Hessinger, M. (2009). Learning performance with interactive simulations in medical education: lessons learned from results of learning complex physiological models with the HAEMOdynamics SIMulator. *Computers & Education, 52*, 292–301.

Hsu, E. (1989). Role-event gaming simulation in management education. *Simulation & Games, 20*, 409–438.

Hsu, L. (2012). Web 3D simulation-based application in tourism education: a casem study with second Life. *Journal of Hospitality Leisure, Sport & Tourism Education, 11*, 113–124.

Ineson, E., Jung, T., Hains, C., & Kim, M. (2013). The influence of prior subject knowledge, priorability and work experience on self-efficacy. *Journal ofHospitality,Leisure,Sport&TourismEducation, 12*, 59–69.

Jafer, S., Liu, Q., & Wainer, G. (2013). Synchronization methods in parallel and distributed discrete-event simulation. *Simulation Modelling Practice and Theory, 30*, 54–73.

Junek, O., Lockstone, L., & Mair, J. (2009). Two perspectives on event management employment: student and employer insights into the skills required to get the job done!. *Journal of Hospitality and Tourism Management, 16*, 120–129.

Kendall, K. W., & Harrington, R. J. (2003). Strategic management education incorporating written or simulation cases: an empirical test. *Journal of Hospitality & Tourism Research, 27*, 143–165.

Korte, R. F., & Chermack, T. J. (2007). Changing organizational culture with scenario planning. *Futures, 39*, 645–656.

Kose, H., Tokay Argan, M., & Argan, M. (2011). Special event management and event marketing: a case study of TKBL all star 2011 in Turkey. *Journal of Management and Marketing Research, 8*, 1–11.

Kozlov, M. D., & Johansen, M. K. (2010). Real behavior in virtual environments: psychology experiments in a simple virtual-reality paradigm using video games. *Cyberpsychology, Behavior, and Social Networking, 13*, 711–714.

KZero. 2011. Available: ⟨http://www.kzero.co.uk/insight-research/⟩.

Lainema, T., & Makkonen, P. (2003). Applying constructivist approach to educational business games: case REALGAME. *Simulation & Gaming: An Interdisciplinary Journal of Theory, Practice and Research, 34*, 131–149.

Lamb, D. (2006). Event management education in sport and leisure: integrating theory with practice, using experiential teaching methods. *Global Events Congress* Australia

Larson, R. (2002). Available:. *Airline Yield Management [Online].* Cambridge, Massachusetts, United States: Massachusetts Institute of Technology. ⟨http://web.mit.edu/urban_or_book/www/animated-eg/ym/index.html⟩ [Accessed 19/6/2014 2014].

Martin, D., & McEvoy, B. (2003). Business simulations: a balanced approach to tourism education. *International Journal of Contemporary Hospitality Management, 15*, 336–339.

Matveevskii, A. S., & Gravenstein, N. (2008). Role of simulators, educational programs, and nontechnical skills in anesthesia resident selection, education, and competency assessment. *Journal of Critical Care, 23*, 167–172.

Mayrath, M. C., Traphagan, T., Heikes, E. J., & Trivedi, A. (2011). Instructional design best practices for second life: a case study from a college-level english course. *Interactive Learning Environments, 19*, 125–142.

Meissner, P., & Wulf, T. (2013). Cognitive benefits of scenario planning: its impact on biases and decision quality. *Technological Forecasting and Social Change, 80*, 801–814.

Miller, J. S. (2004). Problem-based learning in organizational behavior class: solving students' real problems. *Journal of Management Education, 28*, 578–590.

Morse, J. (2001). The Sydney 2000 olympic games: how the Australian tourist commission leveraged the games for tourism. *Journal of Vacation Marketing, 7*, 101–107.

O'Halloran, R., & Deale, C. (2010). Designing a game based on monopoly as a learning tool for lodging development. *Journal of Hospitality & Tourism Education, 22*, 35–48.

Oliveira, I., Tinoca, L., & Pereira, A. (2011). Online group work patterns: how to promote a successful collaboration. *Computers & Education, 57*, 1348–1357.

Parker, M. W., Shoop, S. A., Coutermarsh, B. A., Wesson, K. D., & Stanley, J. M. (2009). Verification and validation of a winter driving simulator. *Journal of Terramechanics, 46*, 127–139.

Petrakou, A. (2010). Interacting through avatars: virtual worlds as a context for online education. *Computers & Education, 54*, 1020–1027.

Phelps, R., Chan, C., & Kapsalis, S. C. (2001). Does scenario planning affect performance? Two exploratory studies. *Journal of Business Research, 51*, 223–232.

Phillips, M. S., & Ponsky, J. L. (2011). Evidence of the benefit of simulator training for the education of surgeons. *Techniques in Gastrointestinal Endoscopy, 13*, 119–125.

Pituch, Lee Pituch, K. A., & Lee, Y. - K. (2006). The influence of system characteristics on e-learning use. Computers & Education.

Qiu, M., & McDougall, D. (2013). Foster strengths and circumvent weaknesses: advantages and disadvantages of online versus face-to-face subgroup discourse. *Computers & Education, 67*, 1–11.

Ruben, B. D. (1999). Simulations, games and experience-based learning: the quest for a new paradigm for teaching and learning. *Simulation & Gaming, 30*, 498–505.

Ruggeroni, C. (2001). Ethical education with virtual reality: immersiveness and the knowledge transfer process. In G. R. F. Davide (Ed.), *Communications Through Virtual Technology: Identity Community and Technology in the Internet Age.* Amsterdam: IOS press.

Sadideen, H., Hamaoui, K., Saadeddin, M., & Kneebone, R. (2012). Simulators and the simulation environment: getting the balance right in simulation-based surgical education. *International Journal of Surgery, 10*, 458–462.

Schmitt, P. J., Agarwal, N., & Prestigiacomo, C. J. (2012). From planes to brains: parallels between military development of virtual reality environments and virtual neurological surgery. *World Neurosurgery, 78*, 214–219.

Schulzke, M. (2013). Serving in the virtual army: military games and the civil-military divide. *Journal of Applied Security Research, 8*, 246–261.

Siddiqui, A., Khan, M., & Akhtar, S. (2008). Supply chain simulator: a scenario-based educational tool to enhance student learning. *Computers & Education, 51*, 252–261.

Sigala, M. (2002). The evolution of internet pedagogy: benefits for tourism and hospitality education. *Journal of Hospitality, Leisure, Sports and Tourism Education, 1*, 29–45.

Sigala, M. (2004). Investigating the factors determining e-learning effectiveness in tourism and hospitality education. *Journal of Hospitality & Tourism Education, 16*, 11–21.

Sigala, M. (2007). Integrating Web 2.0 in e-learning environments: a socio-technical approach. *International Journal of Knowledge and Learning, 3*, 628–648.

Sigala, M. (2012). Exploiting web 2.0 for new service development: findings and implications from the Greek tourism industry. *International Journal of Tourism Research, 14*, 551–566.

Sigala, M. (2013). Using and measuring the impacts of geovisualisation on tourism education: the case of teaching a service management course. *Journal of Hospitality, Leisure, Sport & Tourism Education, 12*, 85–98.

Sigala, M. (2015). The application and impact of gamification on trip planning and experiences: the case of TripAdvisor's funware. *Electronic Markets: The International Journal of Networked Markets*, in press.

Sigala, M., & Christou, E. (2003). Enhancing and complementing the instruction of tourism and hospitality courses through the use of on-line educational tools. *Journal of Hospitality & Tourism Education, 15*, 6–15.

Soll, J. B., & Klayman, J. (2004). Overconfidence in interval estimates. *Journal of Experimental Psychology: Learning, Memory, and Cognition, Technology & Work, 30*, 299–314.

Soteriades, M. D., & Dimou, I. (2011). Special events: a framework for efficient management. *Journal of Hospitality, Marketing & Management, 20*, 329–346.

Stefanidis, D., Sierra, R., Korndorffer, J. R., JR., Dunne, J. B., Markley, S., & Touchard, C. L., et al. (2006). Intensive continuing medical education course training on simulators results in proficiency for laparoscopic suturing. *The American Journal of Surgery, 191*, 23–27.

Talebian, S., Mohammadi, H. M., & Rezvanfar, A. (2014). Information and communication technology (ICT) in higher education: advantages, disadvantages, conveniences and limitations of applying e-learning to agricultural students in Iran. *Procedia - Social and Behavioral Sciences, 152*, 300–305.

Toomey, R., Priestly, I., Norman, A., & O'Mahony, G. B. (1998). Effective teaching and learning in a simulated environment: a higher education case study. *Journal of Hospitality & Tourism Education, 10*, 28–32.

van der Heijden, K. (2005). *Scenarios: The Art of Strategic Conversation*. Sussex, England: Jon Willey and Sons LTD.

Vogel, J. J., Vogel, D. S., Cannon-Bowers, J., Bowers, C. A., Muse, K., & Wright, M. (2006). Computer gaming and interactive simulations for learning: a meta-analysis. *Journal of Educational Computing Research, 34*, 229–243.

Vos, L. B., R. (2010). Marketing simulation games: student and lecturer perspectives. *Marketing Intelligence & Planning, 28*, 882–897.

Wang, M. (2011a). Integrating organizational, social, and individual perspectives in web 2.0-based workplace e-learning. *Information Systems Frontiers, 13*, 191–205.

Wang, T. J. (2011b). Educating avatars: on virtual worlds and pedagogical intent. *Teaching in Higher Education, 16*, 617–628.

Wright, G., Cairns, G., & Goodwin, P. (2009). Teaching scenario planning: lessons from practice in academe and business. *European Journal of Operational Research, 194*, 323–335.

Wu, W.-H., Chiou, W.-B., Kao, H.-Y., & Hu, C.-H. H., S.-H. (2012). Re-exploring game-assisted learning research: the perspective of learning theoretical bases. *Computers & Education, 59*, 1153–1161.

Zichermann, G., & Cunningham, C. (2011). *Gamification by Design: Implementing Game Mechanics in Web and Mobile Apps*. Sebastopol, CA: O'Reilly Media.