Students’ Perception of Virtual Simulations

STUDENTS' PERCEPTIONS OF THE USEFULNESS OF A VIRTUAL SIMULATION IN POST-SECONDARY HOSPITALITY EDUCATION

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ABSTRACT

Advances in learning technologies provide educators with opportunities to shift the learning environment to more interactive and student-centered learning environments (Scott & Hannafin, 2000). In theory, developing technology-based learning environments, students can be stimulated into becoming more active learners. This study explores students’ perceived usefulness of an Internet-based hospitality simulation to develop competencies and improve course performance. It was hypothesized in this study that students will have a positive perception of the simulation's usefulness. Data were collected from students who participated in an online hospitality simulation as part of their course requirement. Participants in the current research were from seven different hospitality programs where the course instructor required students to participate in an online virtual hospitality business simulation. Results of the study found that students' perceived usefulness of the simulation experience was positive.

Keywords: simulation, gaming, undergraduate education, hospitality education.

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Advances in learning technologies provide educators with opportunities to shift the learning environment to more interactive and student-centered learning environments (Scott & Hannafin, 2000). In theory, developing technology-based learning environments, students can be stimulated into becoming more active learners. This study explores students’ perceived usefulness of an Internet-based hospitality simulation to develop competencies and improve course performance. It was hypothesized in this study that students will have a positive perception of the simulation's usefulness. Data were collected from students who participated in an online hospitality simulation as part of their course requirement. Participants in the current research were from seven different hospitality programs where the course instructor required students to participate in an online virtual hospitality business simulation. Results of the study found that students' perceived usefulness of the simulation experience was positive. Keywords: simulation, gaming, undergraduate education, hospitality education.

INTRODUCTION

With continuous advancements in computer technology, the potential to provide students with experiential learning activities through active learner roles facilitated by interactive learning modules has gained more attention from educators (Gredler, 1994; Martin & McEvoy, 2003). In an attempt to incorporate more innovative tools for delivering course material, educators are looking at technology for application software solutions. Increasingly, it is possible to simulate real world experiences through interactive software that are often missing in the traditional training modes of lecture and case study. Incorporating interactive games, simulations, and drills
that create an environment where users are more active in the learning process present an avenue for educators to explore.

To date, some educators in hospitality have used these applications to enhance the learning experience for students. Computer-based simulations have been used in both the hospitality industry and in education since the late 1960s as an instructional tool to help reinforce hospitality concepts such as financial management, marketing, human resources, and the dynamics of interdepartmental relationships (Kluge, 1996; Martin & McEvoy, 2003; Miller & Petrillose, 1992). However, there is little empirical evidence demonstrating the usefulness of simulations in improving learner performance. Therefore, the purpose of this study is to determine whether students perceive computer simulations to be useful tools in developing their competencies while improving their course performance.

BACKGROUND

The instructional philosophy known as constructivism is based on the theoretical belief that student understanding is constructed through the reflection of personal experiences. Through the use of experiencing concepts with the support of computers, the potential to act out constructivist theories toward knowledge acquisition is more easily facilitated. Constructivists assert that student learning is an active process in which learners construct new ideas or concepts based on their current and past knowledge (Bruner, 2002). The theory holds that higher-order cognitive skills are developed when instructors use this strategy as compared to the application of a behaviorist strategy that is a competency-based model. Student involvement in higher-order cognitive skills becomes possible with computers because they provide memory support, juggle interrelated variables, and perform lower-level cognitive tasks (Salomon, 1992). Findings from a study by Feinstein (2001) indicate that experiential learning increases learners’ capacity to evoke
higher-order cognitive abilities in terms of problem-solving skills and judgment, thereby increasing a learner’s dynamic knowledge. Other positive outcomes may also include improvement or mastery of a skill or strategy through an effective partnership with the learning environment in addition to reaping the benefits of improved cognition (Murphy, 1997). These researchers suggest that computers represent a means to enhance students' cognitive skills. As Salomon (1992) explains:

The intellectual partnership with computer tools creates a zone of proximal development whereby learners are capable of carrying out tasks they could not possibly carry out without the help and support provided by the computer. This partnership can both offer guidance that might be internalized to become self-guidance and stimulate the development of yet underdeveloped skills, resulting in a higher level of skill mastery (p.252).

This partnership with computer-assisted learning can also lead to enhancing the general problem solving ability of its users. Developments in new computer-based learning environments have been found to facilitate complex problem solving through integrated knowledge (Dijkstra, Krammer & Merriënboer, 1992). Essentially, these technologies have bypassed the behaviorist philosophy, that student learning can only be insured through the measurement of observed and objective student’s behaviors, to embrace student-instruction interaction (Winn, 1993). Successful computer-based learning systems are likely developed on the foundation of the constructivism learning model whereby knowledge is constructed by the students themselves, entails higher-order cognitive skills and is not delivered by the courseware. Undoubtedly, active participation and interactivity with the technology presupposes any
experience, knowledge, skills’ acquisition, or the change of ability into a skill that is encouraged under the constructivist model (Mikropoulos, Chalkidis, Katsikis, & Kossivaki, 1997).

Advances in learning technologies have afforded educators with the opportunity to enhance the learning environment, resulting in a shifting from the traditional one-to-many pedagogical format to more interactive and student-centered learning environments (Scott & Hannafin, 2000). With technology-based learning environments, students are stimulated into becoming active learners with various capabilities (Vosniadou, De Corte, & Mandl, 1994). For example, stimulated learners can construct knowledge and embed the learning through meaningful, authentic activities that encourage collaboration and social interaction, while taking into consideration students' prior knowledge and beliefs.

**Educational Simulations**

Educational simulations are best described as a simplification of reality presented in an immersive and interactive environment where learners can explore different approaches and experience different outcomes on a daily basis (Hill & Semler, 2001). From an educational perspective, such an exposure could potentially help to reinforce concepts already covered, or help to introduce new concepts in class discussions. With simulations, the object of realism in presenting concepts may be preserved to a greater degree and made more relevant to the target audience than other methods used in the classroom. When compared to other methods of instruction such as case studies, simulations provided a more realistic scenario, a more competitive environment for students participating, and provided for more objective feedback (Thompson & Dass, 2000).

There has been a steady increase in the use of simulations in undergraduate education in general (McDonnell, 2000; Fawcett and Lockwood, 2000), and specifically hospitality educators
to be an effective learning tool (Feinstein & Parks, 2002). Simulations introduced to the
hospitality industry and education have included CRASE (the Cornell Restaurant Administration
Simulation Exercise), based on a medium sized licensed restaurant; CHASE (Cornell Hotel
Administration Simulation Exercise), based on a large hotel with the primary focus on rooms
division management; CHESS (Competitive Hospitality Education Simulation Series), based on
a large hotel with the primary focus being on yield management; and HOTS (Hotel Operational
Training Simulation), based on a hotel with a mix of foodservice and accommodation products
and “Top Of The House” based on a 500 room hotel in a medium sized city with a focus on
situation analysis, performance assessment, business plan development, and operating decisions
for the hotel (Fawcett, 2002; Martin & McEvoy, 2003; Hinton, 1996).

To a large extent, the simulations mentioned above feature limited visual interfaces or
other forms of pictorial representations. That is to say, “simulations used in hospitality education
are alphanumeric simulators that do not provide a visualization or graphical representation of the
dynamic processes of a hospitality operation” (Feinstein & Parks, 2002; p. 405). Moreover, they
tend to be proprietary software that requires schools to purchase and install the program from a
diskette on a single computer to complete work sessions, therefore, were not designed for
learning in an online environment. Yet, with the thrust towards the use of the Internet in higher
education, the potential exists to create experiential learning using traditional simulations to
capitalize on the possibilities and realism that Internet-based information technology provides
(Galea, 2001). As Internet-based learning technologies have proliferated on university campuses
through the extensive use of WEBCT and Blackboard (Stoel & Lee, 2003), the potential also
exists for more educational simulations, in particular those in hospitality, to take advantage of the
anywhere, anytime paradigm.
Several studies have been conducted to evaluate simulations in hospitality education. Feinstein and Parks (2002) argue that while these studies have highlighted the use of simulation to bridge the gap between theory and practice, which contributes to the literature, they have mostly been conceptual rather than empirical. Fawcett (1996) identified six possible learning outcomes by examining the use of CRASE in educating hospitality students in accounting. The overall conclusion by Fawcett (1996) was that CRASE promoted higher levels of industry and work related skills that were more difficult to develop in traditional learning environments. Similarly, Top of the House was used by Ferreira (1997) to examine whether or not students improved their decision-making performance in two measurements after five rounds of the computer simulation program. It was observed that team building and group cohesion skills emerged for most groups working in the simulated environment.

Feinstein (2001) designed a quasi-experimental study to explore the effectiveness of a simulation as an instructional system in foodservice. Using a Foodservice Instructional Simulation Technique (FIST) to educate foodservice managers on the dynamics of a foodservice operation, an assessment tool was created to differentiate cognitive abilities of participants in the treatment group and the control group. Results of the study showed that dynamic knowledge and higher order cognitive abilities increased as a result of simulation modeling. In a study on the use of HOTS in hospitality and tourism education, Martin and McEvoy (2003) sought to determine the effectiveness of simulations in hospitality education by surveying its users. Their findings suggested that the simulation was effective as a learning tool in helping students to apply the principles and concepts of core hospitality courses such as marketing, finance, accounting, and human resources.
In another research conducted by Curland and Fawcett (2001) using the CRASE simulation to develop financial skills in hospitality undergraduates, it was found that student learning was enhanced and their apprehension towards the accounting course was reduced. More specifically, students reported that they developed a range of skills and techniques that were facilitated by using real accounting data obtained from the income statement and balance sheet of their restaurant. Interestingly, students showed ownership of the business and felt they could work easier with the data as it originated from the businesses created in CRASE.

It is evident from the studies conducted that students experienced increased levels of performance in several competencies such as decision-making, group cohesiveness, communication, and negotiation skills. The studies also indicate that simulations were an effective instructional tool for use in hospitality education and contributed to increasing higher order cognitive abilities. Building on this knowledge, this study sought to contribute to the existing literature by exploring the perceptions of students of an Internet-based simulation.

**Internet-Based Simulations**

Presently, there is an increase in the move towards developing simulations for use in the online environment. With the widespread use and accessibility of information technology it is now possible to develop experiential pedagogy that combines all the teachings of traditional simulations with the new possibilities and realism that Internet-based information technology provides (Galea, 2001). In particular, the Internet medium supports simulations that are socially collaborative, international, and cross-cultural with rich information resources available on demand (Martin, 2003). Students may find themselves as part of an online virtual community with the ability to interact with a more diverse set of users from other universities/colleges.
To date, one virtual reality simulation product for hospitality education has detoured from the convention to capitalize on the benefits of Internet technologies by providing an interactive graphical online learning environment where users are the owners of a virtual business they created and managed. BYOB or BuildYourOwnBusiness™ provides an experiential learning environment for students in an online community to participate in activities related to planning, opening, managing, and problem-solving an on-going hospitality business. The business exists in the form of a Web-page that acts as a gateway for other students and instructors to visit and interact with the owner and the virtual hospitality businesses. Visualizations of tangible features such as a hotel lobby or the lounge of a bar are projected on screen for ‘guests’ and is just one of the components of the virtual business that can be evaluated by visitors. It is possible that these and other factors may impact how students perceive the use of simulations as instructional tools.

THE RESEARCH SETTING

While computer-based simulations have been credited with achieving a greater degree of realism by reproducing the attributes of a real-world system (Shannon, 1975), there appears to be a need for rigorous research on measuring the usefulness of the technology as an instructional tool (Feinstein & Parks, 2002). Previous studies on simulations used in hospitality education have focused on: (1) how hospitality principles are reinforced; (2) students’ feelings towards simulations; (3) how student learning was enhanced; and (4) how it would prepare students for management positions in the industry (Martin & McEvoy, 2003; Russell & Russell, 1996; Curland & Fawcett, 2001; Pederson & Pederson, 1993). However, the current study utilized an independent approach to obtain students’ perceived usefulness of an Internet-based simulation when used to complement traditional instruction in undergraduate education as an assignment for
a hospitality course. As such, the following research question was formulated to guide the research process: “What are the perceptions of students regarding the usefulness of an Internet-based hospitality simulation in their course?”

Student perception of the effectiveness of the use of the simulation in their hospitality course was chosen because of the challenge of measuring learning (must have a control and an experimental group over time in a controlled setting), student perceptions may be more important than reality in supporting student learning, and identifying students’ perceived learning will contribute to our body of knowledge of learning effectiveness.

BUILD YOU OWN BUSINESS™ SIMULATION

BuildYourOwnBusiness or BYOB is a proprietary software computer-based learning simulation targeted to hospitality educators at two and four-year institutions. BYOB business simulation offers both individual participant and group/team involvement. BYOB enables all participants to plan, open, and operate their "very own" hospitality business. Group interaction, including hiring a peer manager and participating in online group discussions are an integral part of the BYOB learning process. Simulated online web site activities include interacting, posting, researching, exploring, chatting with peers, creating, managing and marketing individual hospitality businesses. The BYOB simulation focuses on real-time business simulation that enables learners to plan, save, purchase, manage, and problem-solve an ongoing hospitality business operation encompassing a choice of restaurants, hotels, bistros, nightclubs, pubs, or resorts.

Simulation Learning Objectives

- Strengthen valuable computer literacy
- Establish competence in using real-time online learning resources
- Experience "real world" hospitality business operations
Encourage individual creativity and risk assumption
Promote problem solving and financial and marketing management skills
Actively compete with other peer operated businesses
Acquire ongoing daily business acumen and owner dedication
Experience accountability and outcome of growth and success or failure

*Simulation Hospitality Business Planning*

There are three sequential parts to the BYOB simulation. In part one, learners go through the "blueprint" stage or planning stage prior to opening their dream spot. Students must visit "Hospi-ville" (the main city of the "Simulation Island") and purchase modules from the Hospi-ville shops. There are 20 modules in total. The shops contain vital information learner's need to open properly. Purchasing modules from the shops create the building blocks for the participant's business blueprints. Once all the modules have been purchased, the learners proceed to stage two where they will set up shop on "Friday Island".

Learners are provided with all the necessary information about Friday Island in stage two. This enables participants to make educated choices as to where they will locate their business. Population of the towns, tax rates, geographic attributes, demographics, daily variable weather, and other business locations are just some of the extensive variables provided for learners to study. The location chosen will ultimately determine how initial sales will be, poor or profitable.

Participants must submit a suitable menu and press release for their operation prior to opening their business in stage 3. Participants venturing into business with the resort simulation would need to put much more thought into the menu creation, as there are multiple dining rooms and bars. The press release must be created to achieve a quality level suitable for media publication or newsletter. Experts will then review menus and press releases after they have been
uploaded to the simulation server. Once approved, the press release announcing the grand opening of the new business will be e-mailed to all other players of the simulation, setting the competitive macro business-operating environment in place.

*Ongoing Hospitality Business Simulation Operations*

The ongoing daily operation of the learner's new online business requires participant’s to maintain his or her own simulation homepage. Other learners, friends, players and Internet surfers can visit their homepage, increase their hit counter, upload and view their menu and press releases, leave a message on their bulletin board, and review how well they are doing with their business simulation. Participants must log in each day to review and reconcile their daily sales or to explore what other virtual businesses are doing. This market analysis will help participants determine what marketing add-ons or changes in strategy should be made.

As students progress through the simulation they can purchase marketing add-ons as business revenues permit. Examples of marketing add-ons include: improved newspaper advertisements, special theme nights, and other programs that will increase sales on special days. Participants will also have an opportunity to add on to their business, such as building a patio. These add-on modules will be expensive, but will pay off depending on where they have located their business and the demographics of their consumers.

While students are participating in operating their business they will randomly be give an unique challenge or opportunity on a regular basis. Each “happenstance” incident will add or delete money from business operating accounts. Such as "staff stealing" will take money from business accounts, while a "busload of tourists just popped in" will increase operating revenues.

Successful participants must log in every day to reconcile daily sales. Any participant not logging in for seven days will receive a warning email. Another email will be delivered after
twelve days. This email will state that "in two days your simulation is over and the bank will foreclose on your business and land". The bank will then foreclose and shut down anyone who has not logged in for 14 days. The simulation is flexible enough for instructors to customize the elements of the simulation that best meets their instructional goals.

THE SURVEY INSTRUMENT

For this study, a survey was developed that targeted students who were required by their instructors to use the Internet-based simulation as part of their coursework. The sample for the research study consisted of users of the Internet-based simulation, BYOB, who had access to the simulation in December 2003. Due to the nature of the simulation, users can register to start on any given Monday for a period of 6 or 8 weeks. Since most users were registered on the simulation for 8 weeks in addition to having different start and end dates, a qualifying question was asked before students gained access to the survey. The survey was made available online for a period of 26 days from February 5th to March 1st, 2004. The research determined that at least 4 weeks of experience in the online environment of the simulation was needed to adequately expose the users to the concepts explored in the survey. Therefore, those respondents who indicated that they used the simulation for less than four weeks immediately received a thank-you message and were not included in this study. Those students that identified that they had four or more weeks of experience on the simulation were able to complete the survey.

During the time period that the survey was available on the gaming website, 237 eligible students agreed to participate as they had at least 4 weeks experience with the simulation. A total 113 completed surveys were collected and used for the current analysis for 47.7% response rate. Since BYOB simulation was selected to conduct this research a convenience sample strategy was employed.
On a five-point Likert-type scale, with 1 being “not at all useful” and 5 being “very useful”, students were asked about their ‘perceived usefulness’ of the Internet-based simulation by indicating the level to which ten related descriptors were important. Questions pertaining to perceived usefulness were obtained from three related studies on the usefulness of simulations in education. Slight modifications were made to suit the purposes of this study. Therefore, items addressing ‘planning skills’, ‘decision-making skills’, ‘hospitality business concepts’, ‘general management perspectives’, ‘financial data analysis’, ‘communication skills’, and ‘problem identification and analytical skills’ were obtained from Chang, Lee, Ng, and Moon (2003). ‘Improve quality of course assignments’ was adapted from Stoel and Lee (2003) while ‘enhance effectiveness in course’ and ‘improve performance in course’ were sourced from McGorry (2003). To that end, Table 1 shows a list of the questions asked of students relating to their perceived usefulness of the simulation. In addition, students were asked to elaborate on background information relating to their demographics and their experience using simulations.

**Insert Table 1 about here**

Since the researchers expected that the use of the simulation as part of the students’ hospitality courses would be perceived as useful by students a One-Tail t statistic test was used to measure any significant differences between the mid-point and student’s mean scores collected for students’ perceived usefulness of the simulation for learning hospitality business skills (Stockburger, 2002).

**RESULTS**

An original data set of 113 cases was suitable for conducting statistical analyses in this study. The summary of scores for students’ personal demographics is presented in Table 2. The majority of students were found to be between the ages of 19 and 21 years of age (68%).
Seventy-Five percent of the respondents were female and 62 percent reported that they were freshman in their college education.

**Insert Table 2 about here**

Additionally, an analysis was carried out on two variables – ‘hours per week’ and ‘like simulation’ to examine if the amount of hours students reported working in the simulation corresponded to their response of pleasure with the simulation. The resulting cross-tabulation is found in Table 3. Students were asked to indicate the number of hours spent per week working with the simulation. Student responses were collapsed into 5 hour segment ranging from 1 to 5 hours per week (47.6%) to over 26 hours per week (3%). Seventy-eight percent of student respondents spent less than 10 hours per week working in the simulation.

Students who indicated that they did not like simulations were more likely to have logged in for the fewest number of hours per week; 47.6% reported being logged in for less than 5 hours per week. A similar trend was noticed for those students who indicated they did not know if they liked simulations. The more time students spent working in the simulation per week the less likely they were to report a negative or undecided response to their enjoyment of the experience. Forty-nine point five percent of the 113 respondents (52) reported a positive feeling toward experience of using the simulation, where as the number of students reporting negative or neutral perception of the simulation were 28 and 25 respectively.

**Insert Table 3 about here**

STUDENTS’ PERCEIVED USEFULNESS

In the One-Sample t-test, all ten items as well as ‘overall perception’ were selected for analysis. Using a test value of 3.0 (the midpoint), the items were tested at a 95% confidence
interval. These items were included in the t-test in order to determine if there were any outliers that influenced the mean score for ‘overall perception’. To measure the ‘overall perception’ the test should be significantly different between the mean score from the midpoint of 3.0. The results of the t-test are shown in Table 4.

**Insert Table 4 about here**

While the mean score for ‘overall perception’ was significant, only six of the ten items measuring the variable were significant. As seen in Table 4, ‘communication skills’, ‘improve quality of course assignments’, ‘enhance effectiveness in course’, and ‘performance in course’ were not found to be significant. Therefore, student mean scores of their responses of the perceived usefulness of the simulation in their class was that the simulation was useful for developing planning, decision making, and analytical skills and in understanding hospitality, management, and financial management concepts.

**DISCUSSION**

A majority of the students participating in this study were freshman, female, and between the ages of 19-21 years of age. Students in this study indicated that they logged onto the simulation an average of seven times per week and a majority spent less than 10 hours working on the simulation (78.1%).

The amount of time that students engaged working in the simulation was found to be associated with their reporting of their enjoyment of the experience. In other words, students were less likely to report that they did not enjoy the simulation experience the longer they spent logged on. However, conversely, a majority of those students that reported that they enjoyed the simulation experience also reported that they spent less than 5 hours per week logged onto the
simulation. It is important to note that the developers of the software expected students to work in the simulation about 5 hours per week to achieve the minimum acceptable benefit from the experience.

The authors anticipated that if a student enjoys simulations then he/she would spend more time on it because it is something they enjoy doing. However, the results of the current study suggest that even when students reported that they enjoyed the simulation this did not equate in students spending more time on the simulation. This may be due to their perceptions that the simulation was not useful to developing professional competencies or improving course performance.

Since the result diverted from our expectation, it may be argued that those indicating they liked simulations had a higher degree of familiarity with virtual gaming environments and the application of this type of software to the creation of a business and learning concepts applicable to the hospitality industry was not detrimental to their enjoyment. Moreover, these students may be more capable of adjusting to an educational simulation easier and are more adept at interacting with virtual environments. It is possible that from their past experience with virtual environments, students were able to apply more developed skills and strategies of interacting with the virtual environment in a more effective and efficient manner that required less time commitments than those who were new to this type of experience.

Additionally, it appears that using the simulation proved more challenging for students who were not familiar with simulation software and as a result, they spent less time with the simulation. This supports other studies conducted by Starkey and Blake (2001) and Galea’s (2001). As these authors suggest in their reported findings, students may experience challenges such as the lack of user friendliness, technical faults, and the perceived reality in the environment.
and as such, may respond by committing less time towards their business in the simulation. It should be noted however, that these assertions are made entirely without any known general population measure for the average time spent per week by students in other online simulated environments.

From the students’ perspective, the results of this study are that the Internet-based simulation was shown to be a useful instructional tool for the development of skills crucial to the hospitality business management namely those skills relating to planning, decision-making, general management, hospitality concepts, and problem identification. However, students participating in this study did not perceive the experience of using the Internet-based simulation in their hospitality course was useful in improving the quality of the assignments and communication skills or the effectiveness of the course. Additionally, students did not make the connection between the use of the simulation and their performance in the course.

The findings of this exploratory study indicate that the use of Internet-based hospitality simulation is well received by students as being useful in learning hospitality business concepts. However, instructors should identify opportunities to integrate these experiences into their courses to enable students to make the connection that the lessons learned in the virtual environment are directly related to their success in the real classroom.

Based on our findings we have several suggestions for instructors to think about when utilizing a simulation as part of their hospitality class. For starters, this can be done by actively engaging the work students are doing in their virtual business with the topics and principles discussed in the classroom. Using real examples of the businesses in the virtual world can illustrate to students that what is successful in their virtual business is directly applicable to real
businesses. Secondly, instructors can look for ways to connect the classroom assessment of the simulation experience to the business concepts identified in this paper. Many of the virtual activities that students will do to be successful in the simulated environment uses metaphors that may not be obvious to the students. For example, in the simulation described in the current paper, students are required to check on their virtual employees and to make sure that they remain happy and content. In the virtual setting, student owners do this by pushing buttons which represent their employees. In the real world successful manager will do this by getting to know their staff and identifying what buttons to push to motivate staff and keep them happy.

Future research should continue to build our understanding of effective ways to provide students with real world applications of owning a business with limited consequences to failure. Connecting students’ perceived usefulness with instructional strategies of faculty will help to identify appropriate ways to integrate this powerful new instruction option in the hospitality curricula.

The use of Internet-based hospitality simulations served students well in providing them a taste of owning a hospitality business and generally enhanced their understanding of the complexity of managing a hotel or restaurant. The richness of the information generated from this study allows for a better understanding of students’ perceived usefulness of the use of simulations in post-secondary education.

REFERENCES


**Table 1**

Survey Questions on ‘Perceived Usefulness’
I think the Web-based simulation is useful for this course because it helped me to …

1. Develop planning skills.
2. Develop decision-making skills.
3. Learn concepts related to hospitality business.
4. Understand general management perspectives.
5. Use financial data to make business decisions.
6. Improve written communication skills.
7. Develop problem identification and analytical skills.
8. Improve the quality of their course assignments.
9. Enhance their effectiveness in the course.
10. Improve their performance in the course.

Table 2
Summary: Students’ Personal Demographics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Levels</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Under 19</td>
<td>24</td>
<td>21.2</td>
</tr>
<tr>
<td></td>
<td>19 - 21</td>
<td>68</td>
<td>60.2</td>
</tr>
<tr>
<td></td>
<td>22 - 24</td>
<td>15</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td>Over 24</td>
<td>6</td>
<td>5.3</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>38</td>
<td>33.6</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>75</td>
<td>66.4</td>
</tr>
<tr>
<td>Year in college</td>
<td>Freshman</td>
<td>69</td>
<td>61.1</td>
</tr>
<tr>
<td></td>
<td>Sophomore</td>
<td>9</td>
<td>8.0</td>
</tr>
<tr>
<td></td>
<td>Junior</td>
<td>11</td>
<td>9.7</td>
</tr>
<tr>
<td></td>
<td>Senior</td>
<td>21</td>
<td>18.6</td>
</tr>
<tr>
<td></td>
<td>Graduate Student</td>
<td>1</td>
<td>.9</td>
</tr>
<tr>
<td></td>
<td>Transfer Student</td>
<td>1</td>
<td>.9</td>
</tr>
<tr>
<td></td>
<td>Returning Student</td>
<td>1</td>
<td>.9</td>
</tr>
</tbody>
</table>

Table 3
Cross-tabulation: Hours per Week and Like Simulations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levels (hours)</th>
<th>% within Hours per Week</th>
<th>% within Like</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours per Week</td>
<td>1 to 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>44.0%</td>
<td>42.3%</td>
<td>21.0%</td>
</tr>
<tr>
<td></td>
<td>% within Like</td>
<td>32.0%</td>
<td>57.1%</td>
<td>15.2%</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>24.0%</td>
<td>48.0%</td>
<td>11.4%</td>
</tr>
</tbody>
</table>

Total | 50 | 100.0% | 47.6%
<table>
<thead>
<tr>
<th>Hours per Week</th>
<th>n</th>
<th>% within Hours per Week</th>
<th>% within Like</th>
<th>% within % of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 to 10</td>
<td>17</td>
<td>53.1%</td>
<td>21.9%</td>
<td>25.0%</td>
</tr>
<tr>
<td></td>
<td>7</td>
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Table 4
Results of One Sample Test for Students’ Perceived Usefulness

<table>
<thead>
<tr>
<th>Items Measuring Perceived Usefulness</th>
<th>t</th>
<th>df</th>
<th>Sig. (1-tailed)</th>
<th>Mean**</th>
<th>Mean Difference</th>
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<tbody>
<tr>
<td>Planning Skills</td>
<td>4.607</td>
<td>112</td>
<td>.000*</td>
<td>3.42</td>
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<tr>
<td>Decision-making Skills</td>
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<td>112</td>
<td>.000*</td>
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<td>112</td>
<td>.000*</td>
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<td>112</td>
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<tr>
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<td>112</td>
<td>.000*</td>
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<td>Problem Identification/Analytical Skills</td>
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<td>.002*</td>
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</table>
* Significant at $p \leq 0.05$

** Scale: 1 = not at all useful; 5 = very useful