บทความวิจัย

การศึกษาเปรียบเทียบประสิทธิผลการจัดการเรียนการสอนแบบบูรณาการการทำงานกับการใช้โปรแกรมจำลองด้วยคอมพิวเตอร์ในรายวิชาเชิงทฤษฎีของหลักสูตรการจัดการอุตสาหกรรมบริการ

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บทคัดย่อ

การเรียนรู้แบบบูรณาการการทำงาน (WIL) ได้เข้ามาเป็นส่วนหนึ่งของการจัดการศึกษาหลักสูตรการบริการมาอย่างช้านาน ซึ่งการจัดการศึกษาลักษณะนี้จะทำให้นักศึกษาสาขาอุตสาหกรรมการบริการได้รับความรู้ที่เป็นหลักการพื้นฐานที่สำคัญในการดำเนินงานขององค์กรที่แท้จริง นอกเหนือจาก WIL แล้ว อีกทางเลือกหนึ่ง คือ การใช้โปรแกรมจำลองด้วยคอมพิวเตอร์ ซึ่งอาจจะสามารถอธิบายทักษะบางอย่างของ WIL ได้ โดยไม่ทำให้ผลการเรียนของนักศึกษาลดลง หรือทำให้นักศึกษาต้องประสบกับความตึงเครียดโดยใช่เหตุ โปรแกรม CESIM Hospitality เป็นหนึ่งตัวอย่างการจำลองแบบออนไลน์ดังกล่าว แต่การศึกษาวิจัยเกี่ยวกับเรื่องนี้ยังอยู่ในระดับที่ค่อนข้างต่ำ ในการศึกษาวิจัยครั้งนี้ได้มีการใช้แบบทดสอบแบบปรนัยเพื่อวัดประสิทธิผลของโปรแกรม WIL และโปรแกรม CESIM Hospitality เพื่อเปรียบเทียบประสิทธิผลของเครื่องมือการสอน พบว่านักศึกษาที่เคยใช้แบบจำลอง CESIM มีผลการทดสอบดีกว่าผู้ที่เข้าร่วมโครงการ WIL อย่างมีนัยสำคัญ ซึ่งชี้ให้เห็นว่าควรมีการบูรณาการการใช้โปรแกรมจำลอง

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ควบคู่กับหลักสูตรการฝึกอบรมด้านการบริการด้วย แต่อย่างไรก็ตาม จากการศึกษาพบว่า ไม่มีความสัมพันธ์ระหว่างคะแนนจากโปรแกรมจำลองและผลการทดสอบของนักเรียนที่ใช้การจำลองนี้ จึงทำให้เห็นว่าโปรแกรม CESIM Hospitality ไม่ควรใช้เพื่อวัดความสามารถทางวิชาการของนักศึกษา

คำสำคัญ: การเรียนรู้แบบบูรณาการการทำงาน โปรแกรม CESIM Hospitality การสอนอุตสาหกรรมการบริการ

RESEARCH ARTICLE

Comparison of the Effectiveness of Work Integrated Learning and Computer Simulation Teaching Method for Theoretical Subjects in Hospitality Industry Curriculum

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Abstract

For some time, Work Integrated Learning (WIL) has been a part of the hospitality sector's educational programs and curricula, attempting to provide hospitality industry students with a fundamental grounding in the day-to-day operations of an actual hospitality organization. An alternative to WIL is computer simulations, which may be able to impart some of the skills offered by WIL without reducing academic performance or subjecting the students to needless stress. CESIM Hospitality is an online example of such a simulation, but it is rather poorly studied. In this study a multiple choice test was used to measure the effectiveness of both a WIL programme and CESIM Hospitality, in order to compare their effectiveness as teaching tools. Students who had used CESIM performed significantly better in the test than those who participated in WIL, suggesting that the simulation should be integrated into hospitality training curricula. However, no correlation was found between the simulation scores and the test results of students who

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had used the simulation, suggesting that CESIM Hospitality should not be used to determine academic ability.

Keywords: Work Integrated Learning, CESIM Hospitality, Hospitality Teaching

Introduction

In many areas of teaching, including hospitality, Work Integrated Learning (WIL) is frequently raised as a means of developing skills that are lacking in the rather theoretical syllabus of many teaching institutions (Chuang et al. 2007; Dickerson & Klein, 2008; Jackson, 2014; Wardle, 2012). However, concerns have been raised that WIL may have deleterious effects on student academic performance (Nonis & Hudson, 2010) and possibly student health (Carney et al. 2005). Computer simulations have been suggested as a ideal solution to these issues (Adobor & Daneshfar, 2006; Bowness, 2004; Fengfeng, 2009), one of the dominant providers of which is CESIM Business Simulations (CESIM Business Simulations, 2017). Research has been done on the teaching suitability of the CESIM Global Challenge, which simulates the management of an international telecommunications company, most of which recommends its use as an educational tool (Kikot et al. 2013; Kikot et al. 2014; Vihakara & Blue, 2015; Selmanovic, 2016). However, very little research has been done on the suitability of the CESIM Hospitality simulation for teaching; one of the rare examples is Sorensen (2011), which found that, on the basis of the simulation improving students' academic ability it should be integrated into the curriculum. This study seeks to expand on this investigation of the CESIM Hospitality simulation.

Research Objectives

This research has two objectives. The first is to compare the effectiveness of WIL programs and the CESIM Hospitality simulation as

educational tools, as determined using a multiple-choice test. The second will seek to determine if the results of the CESIM Hospitality simulation are a suitable method of determining academic ability, by testing for any correlation between participants' simulation scores and test results. Together these objectives will indicate if the CESIM Hospitality program should be integrated into hospitality management courses, if such integration should be alongside or to the exclusion of WIL, and give some indications of how that integration should be performed.

Literature Review

The failure of educators to prepare young people for the workplace has long been a complaint of employers, politicians and the media. This debate has prompted research on this area in a number of employment areas, including the hospitality industry. One commonly reported finding is a gap between the expectations of employers and the skills of students (Beggs et al. 2008; Chen & Gursoy, 2008). Tesone & Ricci (2005) found this in a survey of the hospitality and tourism industry in central Florida; a follow up study some years later (Tesone & Ricci, 2012) showed the persistence of this problem. Similar findings were reported by Fournier & Ineson (2010) in the Swiss hotel and restaurant industries and by Zaitseva et al. (2016) in the hospitality industry in the Russian Federation. The gap between employer expectation and student skills can widen if the hospitality organization in question operates under a different set of cultural

assumptions and norms than the Western model, as Chan & Coleman (2004) found in an investigation of the hotel industry in Hong Kong.

One solution for this apparent educational failure is Work Integrated Learning (WIL). This approach suggests combining the theoretical teaching of traditional education with hands on experience obtained at the workplace (Wardle, 2012).

The benefits for students would seem to be significant. Positive WIL experiences will inspire students in their future hospitality business career (Chuang et al. 2007). The work-experience of WIL can improve chances of future employment, particularly if they have limited work experience beforehand (Jackson, 2014). Furthermore, it has been shown that this increased understanding of the reality of work within the hospitality trade will result in improved worker retention (Chuang et al. 2007; Dickerson & Klein, 2008).

Meanwhile, hospitality employers also stand to gain, not only from staff working on inexpensive rates, but also from a familiarity with the students, which was suggested as a reason for hospitality employers favoring students from educational institutions that use WIL over those that do not (Tesone & Ricci, 2005). Given these benefits, it is unsurprising that a majority of programs teaching in the hospitality field either make use of WIL or plan to in the future (Dahiya, 2013; Mohammed & Rashid, 2016; Sagadin, 2013; Wardle, 2012).

Curiously, despite the benefits of WIL, there does seem to be student resistance to using it. For example, Aggett & Busby (2011) found

that in Britain between 2007-2011 numbers of undergraduate hospitality accepting internships by dropped from 37.2% to 10.4%. Although some of this can be attributed to global economic factors, student attitude did play a part. Researchers have also begun to question if WIL is a purely positive experience.

A common complaint against WIL is that the hands on experience gained may be at the expense of university performance. The extent to which students report this reduction varies greatly (Carney et al. 2005; Curtis, 2005; Jogaratnam & Buchanan, 2004; Roboham, 2009); students in Scotland interviewed by Barron & Ananstasiadou (2009) admitted to no specific challenges ensuing from the hours they were operating, although they did request more flexible class times, while Holmes (2008) reported that almost all of the British students interviewed by indicated that the requirements of their work interfered with completing their degree to some extent. A less subjective study by Nonis & Hudson (2010) found an inversely proportional relationship between students' cumulative grade point average and time spent working.

Another, rather less commonly investigated, criticism of WIL is that it places students under undue stress. Jogaratnam & Buchanan (2004) reported that hospitality students taking part in WIL programs reported more stress than those that did not, while 43 of the 68 working students interviewed by Robotham (2009) felt that taking part in WIL resulted in higher stress levels. Of more concern are the findings of Carney et al. (2005)

that certain health issues were associated with the pressures of combining work and study.

The problems reported by these studies would seem to set a requirement for an educational tool or method that that offers a functional equivalent of the hand-on experience of WIL in a less time consuming and stressful manner. One option that has been raised as an alternative is computer simulations. These educational programs can be delineated as empirical learning environments that replicate the tasks that one would expect to encounter in a real world situation, allowing students to observe and master occupation-relevant knowledge and talent environment (Adobor & Daneshfar, 2006; Bowness, 2004). They permit people to utilize critical thinking and decision making skills in a simulated version of a working atmosphere, and to learn from mistakes without dangerous consequences that would ensue in a real world environment (Adobor & Daneshfar, 2006; Bowness, 2004). Although there some reservations about simulations as a business teaching tool remain, they are generally associated with positive outcomes (Fengfeng, 2009).

Simulations may incidentally offer a solution to a problem reported by Lee (2013). This study notes that the variability in training offered by different universities, and stresses the need for a standardised core of skills in hospitality training. Simulation software, if produced in consensus with leading educators, and particularly if delivered online, may offer a way to deliver this educational core to all hospitality educators.

CESIM Business Simulations is one of the dominant providers of educational business simulation material (CESIM Business Simulations, 2017). Headquartered in Helsinki, Finland since 1996 (CESIM Business Simulations, 2010), this company offers online simulations of a number of business types including general business management, banking and financial services management, electric utilities management, retail store management and hospitality management (CESIM Business Simulations, 2017). These simulations are entirely online in nature; they can be accessed by anyone with an internet connection, do not require any additional applications to operate and are offered in a range of languages (CESIM Business Simulations, 2017).

One of the most commonly used of these simulations is the CESIM global challenge, which simulates management of a global telecommunications company, and this simulation has been investigated by a number of educators. Kikot et al. (2013) surveyed students who had made use of the CESIM global challenge and found that they engaged by the simulation, and believed that it was extremely valuable to improving their skills. These findings were confirmed by Kikot et al. (2014), though this study also pointed out the need for realism in the simulation and that the teamwork involved was a controversial feature of the simulation. Vihakara & Blue (2015) reported that even for students from eight countries, all of whom were fully employed and with at least three years of work experience, the CESIM global challenge was an exciting new technique for learning that helped them analyse and solve real world business problems. After testing

the CESIM global challenge Selmanovic (2016) commented that the simulation was highly effective in enhancing decision making and teamwork skills, and noted that there were plans to integrate it into their curriculum.

The hospitality management simulation offered by CESIM (CESIM Business Simulations, 2016) is of particular interest to resolving both the employer expectation-student skills gap (Beggs et al. 2008; Chan & Coleman, 2004; Chen & Gursoy, 2008; Fournier & Ineson, 2010; Tesone & Ricci, 2005; Zaitseva et al. 2016) and the potential academic/stress problems posed by WIL (Barron & Ananstasiadou, 2009; Carney et al. 2005; Curtis, 2005; Holmes, 2008; Jogaratnam & Buchanan, 2004; Roboham, 2009). The simulation is unusual in that it does not pit the participants against computer generated opponents, but other user operated teams (CESIM Business Simulations, 2016). The primary objective in the CESIM Hospitality simulation is achieving sustainable profitable growth. The simulation is divided into a number of rounds, which cover a simulated two weeks of business management (CESIM Business Simulations, 2016). For each round, participants can make decisions on six variables: revenue management, sales promotion, menu engineering, housekeeping, human resources management and procurement (CESIM Business Simulations, 2016). Decisions made in one round will not only affect profit immediately, but can potentially have effects for the rest of the simulation (CESIM Business Simulations, 2016).

In marked contrast to the CESIM global challenge, there is a paucity of studies on CESIM Hospitality. Sorensen (2011) increased the academic capabilities of students studying hospitality-based higher education programs; and went on to argue that such simulation-based learning ought to be integrated into the syllabus. This study will attempt to rectify this by comparing the effectiveness of CESIM Hospitality with WIL as teaching tools, as measured by an academic test, and to determine the CESIM Hospitality simulation's effectiveness in determining academic ability, by testing for correlations between simulation results and test results.

Methodology

A class of 100 third and fourth year students taking the subject " Strategic management in hospitality" in an Australian university were divided into two groups. Fifty of the students undertook a WIL program. The other fifty students undertook the CESIM Hospitality simulation.

The CESIM Hospitality students were randomly divided into seven groups; six teams of seven students each and one team of eight. The teams were shown the basics of the program, and a tutorial session was held for the participants to ask questions or develop their knowledge of the simulation. The CESIM hospitality simulation was ran for five rounds. At the conclusion of each round the seven teams were scored from one to ten for the six variables: revenue management, sales promotion, menu engineering, house- keeping, human resources management and procurement. The teams were also ranked by overall profit generated at the

conclusion of each round from highest to lowest, ten to four, to allow simple determination of which team was performing the best in the simulation.

All 100 students were simultaneously given a test to complete, based on operational management strategies practiced during the simulation. The test consisted of ten multiple choice questions; each question was marked out of ten (different choices could give partial marks, depending on their accuracy), to give a final mark of 100.

Hypotheses and Statistical Analysis

Hypothesis 1: Among the class as a whole, the CESIM Hospitality simulation group will perform statistically significantly better in the test than the WIL group. This will be determined using an unpaired T-test, using the SPSS v21 package.

Hypothesis 2: Among the CESIM Hospitality simulation group, a correlation will exist between performance in the CESIM Hospitality simulation and performance in the test. This will be determined using a Pearson's correlation test, using the SPSS v21 package.

Results

Hypothesis 1: Among the class as a whole, the CESIM Hospitality simulation group will perform statistically significantly better in the test than the WIL group.

A comparison of the test results suggests that the CESIM Hospitality group (M=72.08, SD=13.09) did indeed outperform the WIL

group (M=61.74, SD=19.76) in the test; this is confirmed by the results of the unpaired T-test (t(98)=3.084, p=0.0027).

Hypothesis 2: Among the CESIM Hospitality simulation group, a correlation will exist between performance in the CESIM Hospitality simulation and performance in the test.

An examination shows a very weak inversely proportional relationship between the simulation results (see Table 1) and the test scores of the CESIM Hospitality group (see Figure 1); the weakness of this correlation is shown by Pearson's correlation test, which showed no correlation between these two variables (r=-0.4437, n=7, p=0.32).

Table 1

Showing Simulation Results for Participating Team

	Team 1	Team 2	Team 3	Team 4	Team 5	Team 6	Team 7
Round 1							
Revenue Management	6	7	4	8	7	4	9
Sales Promotion	4	4	9	7	5	5	9
Menu Engineering	10	6	5	8	4	6	2
Housekeeping	5	4	6	3	8	5	3
HR Management	7	6	3	9	8	8	3
Procurement	2	10	6	7	8	9	4
Profit	7	8	6	10	9	8	5
Score	41	45	39	52	49	45	35

Table 1

Showing Simulation Results for Participating Team (Cont)

	Team 1	Team 2	Team 3	Team 4	Team 5	Team 6	Team 7
Round 2							
Revenue Management	7	7	6	8	6	4	8
Sales Promotion	7	5	6	9	7	6	9
Menu Engineering	6	7	7	8	10	6	3
Housekeeping	5	5	7	6	7	4	3
HR Management	6	5	5	5	5	8	2
Procurement	9	10	7	6	7	9	5
Profit	9	8	7	10	10	6	5
Score	49	47	45	52	52	43	35
Round 3							
Revenue Management	8	7	7	6	7	4	8
Sales Promotion	8	5	7	6	6	6	8
Menu Engineering	8	7	7	10	10	5	6
Housekeeping	2	6	5	6	8	4	6
HR Management	4	5	6	7	5	7	7
Procurement	9	10	7	7	6	8	6
Profit	7	8	7	10	10	6	9
Score	46	48	46	52	52	40	50
Round 4							
Revenue Management	10	9	7	8	6	5	7

Table 1

Showing Simulation Results for Participating Team (Cont)

	Team 1	Team 2	Team 3	Team 4	Team 5	Team 6	Team 7
Sales Promotion	5	8	6	6	8	6	9
Menu Engineering	9	6	7	9	10	5	6
Housekeeping	4	6	5	6	6	5	6
HR Management	5	6	4	7	8	7	5
Procurement	8	9	8	5	8	8	7
Profit	8	9	6	8	10	5	7
Score	49	53	43	49	56	41	47
Round 5							
Revenue	9	8	8	8	7	6	7
Management							
Sales Promotion	6	8	7	6	8	6	8
Menu Engineering	7	7	7	9	10	5	7
Housekeeping	5	7	7	7	7	5	7
HR Management	6	5	5	6	8	7	6
Procurement	9	10	9	8	9	7	10
Profit	6	9	7	8	10	5	9
Score	48	54	50	52	59	41	54
Mean	46.6	49.4	44.6	51.4	53.6	42	44.2
Overall	233	247	223	257	268	210	221

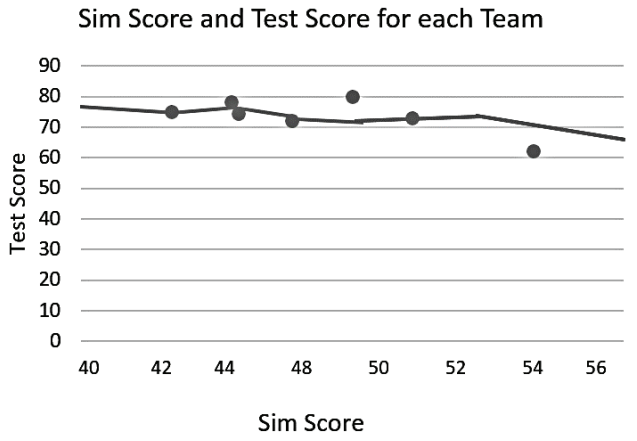

Figure 1:

Scatterplot of the results of the CESIM Hospitality simulation score (Sim Score) against average test results (test score) for each of the seven groups.

Discussion

This experiment had two objectives: first to compare the effectiveness of WIL and the CESIM Hospitality simulation as teaching tools, as measured by an academic test; second to determine the suitability of the CESIM Hospitality Simulation as an assessment tool. These objectives hinge on the validity of the academic test used in this study, both as a measure of academic ability, and ultimately as a measure of preparedness for work in the hospitality industry. Both of these are subject to interpretation and debate, but assuming the test is indeed a reliable measure, the results of this study are indeed intriguing.

The comparison the effectiveness of WIL and the CESIM Hospitality simulation as teaching tools demonstrated that CESIM was the

more effective of the two teaching techniques. This result is consistent with that of Sorensen (2011), who found that CESIM Hospitality increased the academic capabilities of students studying hospitality- based higher education programs. More distantly, they are also consistent with the findings of Kikot et al. (2013) and Selmanovic (2016) who reported positive academic benefits from the similar simulation CESIM Global Challenge.

The extent of the superiority of CESIM Hospitality over WIL should be interpreted with care. One of the objections to WIL is that it reduces with academic performance, either directly by disrupting study (Barron & Ananstasiadou, 2009; Carney et al., 2005; Curtis, 2005; Holmes, 2008; Jogaratnam & Buchanan, 2004; Nonis & Hudson, 2010; Roboham, 2009) or indirectly by increasing student stress (Barron & Ananstasiadou, 2009; Carney et al., 2005; Roboham, 2009). It is not unreasonable to suggest if the test results could be corrected for these factors in some way, the difference between students undertaking WIL and CESIM may have been smaller, perhaps leaving the two functionally equivalent. Furthermore, the more direct experience obtained by WIL may be of less use in preparing students for an academic test, but may yet be invaluable in preparing students for work in hospitality, as has been noted by studies describing an employer expectation/student skill "gap" (Beggs et al., 2008; Chan & Coleman, 2004; Chen & Gursoy, 2008; Fournier & Ineson, 2010; Tesone & Ricci, 2005; Zaitseva et al., 2016). Given this, perhaps WIL and CESIM Hospitality should both be recommended as teaching tools, to be used together, not at each other's expense.

The conclusion that CESIM simulations should be integrated into the syllabus of a teaching institution on the basis of a positive result is not an uncommon one in the CESIM literature; Sorensen (2011) made such a recommendation for CESIM Hospitality, while Selmanovic (2016) had similar plans for the CESIM Global Challenge. However, the second main result of this study would suggest caution should be taken in how the CESIM Hospitality simulation is used. This study found no statistically significant relationship between performance in the CESIM Hospitality simulation and the academic test, and what little trend that existed was a weakly inversely proportional one. Why this result was obtained is more of a puzzle, it may be that the ability to learn from mistakes, one of the points often made in favour of simulations (Adobor & Daneshfar, 2006; Bowness, 2004), may be more important that has been realised. The findings of this study would suggest that although CESIM Hospitality would make an excellent tool for learning, it is a poor one for grading students, and should not be used in this manner.

Conclusion

This study set out to compare effectiveness of the CESIM Hospitality simulation and WIL as teaching tools, and determine the suitability of the CESIM Hospitality simulation for student assessment. This study found that students who had completed the simulation scored significantly better in an academic test than students who had participated in WIL. This shows that CESIM Hospitality is highly suitable for teaching the

concepts of hospitality management, although perhaps integrating it into the teaching syllabus should not be at the expense of WIL. However, the study also found no significant relationship between performance in the simulation and performance in the test, suggesting that CESIM Hospitality should not be used for student assessment.

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