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 Online simulation games for guided learning: a sport business case study

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Article

Online simulation games for guided learning: a sport business case study

Abstract

Business simulation games (BSG) have become a very popular pedagogical tool in university courses and programmes all around the world. Their immense popularity has been a subject of research and academic discourse, especially the past twenty years when many experts have called for more student-centric and reality based pedagogical approaches. Their implementation in business schools has been particularly successful, leading to improved student outcomes, satisfaction and skills development. Their use in sport business courses, though, has been surprisingly neglected in the pertinent literature. In the present study, we attempt to close this gap in the literature by exploring the effectiveness of BSG implementation in sport business courses, as well as the conditions and factors that facilitate the teaching and learning experience in such cases. In doing so, this research followed a mixed methods case study approach. Our findings expand previous conclusions and arguments on the effectiveness of BSGs' use in universities, to the case of sport business courses. They also identify conditions under which the teaching and learning experience is improved, namely effective group work, student engagement, satisfaction from the game and others. Based on these findings we propose useful recommendations and suggestions for future research. We also establish BSG as a form of independent, guided learning activity which is facilitated merely by individual engagement and group work and less from the tutors.

Keywords: Simulation games, Higher education, Sport business

1. Introduction

In an article published by "The Economist" in 2016, the author suggested that business studies (and business theories), as organised in western universities, are becoming a collection of dead ideas and impractical solutions, similar to "flat earth theorists". Some rather less inflammatory arguments have been raised focusing either on the lack of practical application of business education, a lack of real-life skills provided by business schools (Baldwin et al, 2011; Bennis & O'Toole, 2005; Mintzberg, 2004) and the inability to provide answers to crises and debates of our times, such as responsible management during periods of insecurity, the future of work, climate change and others (Alvesson, 2012). To answer the calls for modernisation of teaching in higher education and recognizing the need for integrating more practical real-life elements in students' learning, many academics have adopted the use of Business Simulation Games (BSG) (Farashahi & Tajeddin, 2018). More recently, this rather innovative teaching and learning method has started to make its first steps in sport business programmes, either with the use of generic business simulation games or with new, specialised sport business games (O'Shea & Link, 2019).

Due to their immense popularity, BSGs have been the subject of extensive academic research (e.g. Keeffe, Dyson, & Edwards, 1993; Xu & Yang, 2010; Yasin & Hafeez, 2018). As a result, a great number of publications exist to highlight the effectiveness of BSGs in academic teaching (Yasin & Hafeez, 2018). Specifically, successful implementation of BSGs has been proven to have a significant impact on students' engagement with classes and to their academic performance (e.g. Beuk, 2016). Despite its proven positive influence on teaching and learning, to our knowledge, very few studies exist to explore the mechanisms and processes that enable the use of BSGs. For that reason, therefore, there is a need for further research to explore how and when the use of BSGs is most effective. The need for answering these questions is even

more prominent insport business, where relevant research remains very limited (O'Shea & Link, 2019).

The present study aims to *explore the conditions and factors that facilitate the teaching and learning experience when Business Simulation Games are used in sport business*. By doing so, this paper will further contribute to our understanding of how business simulation games enable students and educators to access and produce knowledge. It is our understanding that BSGs can contribute to immersive learning and teaching, improve student engagement and satisfaction, as well as reinforce soft skills, communication, and social interaction. We make the case that BSGs provide an opportunity for educators to further focus on contemporary management issues such as inequality, environmental sustainability and reflective leadership. In doing so, we will use Vygotsky's *zone of proximal development (ZPD)* (Vygotsky, 1978) as the main theoretical lens and we will consider the further potential BSGs as an effective independent and guided learning facilitator.

The next section of the manuscript presents a detailed literature review on how simulation games are used in business and sport business academic programmes, followed by a section presenting the methodology used. Then the main findings of our quantitative and qualitative studies are discussed and finally, in the last two sections a discussion of the paper's conclusions limitations and interesting directions for future research.

2. Theoretical Background

2.1 Simulation games in Higher Education

Business simulation games (BSG) have become a popular teaching and learning method in business schools over the past 20 years (Faria, 1998, 2001; Keeffe, Dyson, & Edwards, 1993; Xu & Yang, 2010). This is due to their positive effect on student engagement (Beuk, 2016;

Coffey & Anderson, 2006), while providing the students an opportunity to enhance their academic knowledge through augmented practice while reinforcing their soft (employability) skills (Tompson & Dass, 2000; Coffey & Anderson, 2006; Betts & Knaus, 2006). In addition to this, BSG advance the intrinsic motivation of the students/players and therefore increase their performance (Pasin & Giroux, 2011), satisfaction, self-fulfilment, while stimulating curiosity and autonomy (Buila, Catalán & Martínez, 2019). All the above characteristics make business simulations an integral part of teaching and learning in business schools across the globe.

The key to BSG success in engaging and motivating students is the fact that it is one of the most student-centred teaching approaches (Beidatsch & Broomhall, 2010; Wright-Maley, 2015; Worthington, 2018). Students are reportedly fascinated by "actively learning" and having control of their own learning space (Buil, et al, 2020 ; Tompson, & Dass, 2000). While students are little motivated by traditional classes , with simulations, students get to live in a stimulating online active environment, where they get to actively process information rather than using and "consuming" archived material suggested by their tutors. In this context, the students become co-creators of knowledge through an immersive educational experience (Pittaway & Cope, 2007; Matlay, Tunstall, & Lynch, 2010; Worthington, 2018). Similar to researching real case studies, they get to experience real-life scenarios, where they become accountable for their actions and witness the consequent benefits and backdrops. In business studies, this translates into making decisions and developing business knowledge about customers, employees and competitors.

The notion of student autonomy in acquiring knowledge goes beyond student's self-fulfilment and has significant pedagogical benefits. Vygotsky's *zone of proximal development (ZPD)* (Vygotsky, 1978) addressed the benefits of challenging learners to face the unknown and learn with the help of peers and the guidance of educators. The connection of simulation

learning with ZPD starts with the learner itself. The individual begins exploring internally, unearthing the unknown and seeks for solutions in resolving their challenges, or as Clatter (2015:3) puts it "*their conflicts with their current frames of reference*". BSG provide an opportunity to students to identify gaps in their knowledge and often expose their inability to comprehend the multi-layered nature of contemporary business environment. Once the student explores this new learning environment and starts facing new challenges, according to Vygotsky (1978) they will then try to use tools, resources and communication to problem-solve more effectively.

This leads to the next important link between simulation learning and ZPD, which is social interaction. When students try to make sense of their educational challenges and to reorganise their "frames of reference" to resolve problems, being social creatures, they turn to others to assist them – their peers and tutors. This socially constructive learning happens to fit well with how simulations are utilised within education, as part of team projects and significantly aiming at team building, negotiating and collective problem-solving (Tompson & Dass, 2000; Coffey & Anderson, 2006; Betts & Knaus, 2006). In ZPD the role of facilitator/tutor is important in this step as he/she can act as the guide in moving through knowledge and development and achieving learners' *proximal development* (Vygotsky, 1978). The facilitator/tutor may use discussions, demonstrations, case studies and real-life examples (Slatter, 2015) in order to guide the students into this process, but peer-imitation and learning "in collaboration with more capable peers" should not be underestimated (Vygotsky, 1978: 86).

Undoubtedly, business simulation games (BSG) can provide a very useful educational alternatives to traditional methods (Ben-Zvi, 2010) and may further enhance teamwork and collaboration. In simulations, students need to understand the business challenges, inform others about implications and debate with the other members of their group about possible

solutions (Xu & Yang, 2010; DiCamillo & Gradwell, 2013). BSG make communication an essential part of teaching and learning process. It is an experiential method of learning in which social interaction highly affects the process and outcomes in each step of the way. If the students do not collaborate effectively, they are immediately faced with problems, whether these are related to the simulation itself (e.g. missing stock, budgeting issues), or with the operation of the team itself (e.g. misunderstandings, politics within the team). On the other hand, if the team works effectively, simulations provide the ground for students with different skills and backgrounds to reinforce their social skills learn from each other (Caulfield et al, 2012; Buil, et al, 2020).

Apart from being a very effective teaching and learning tool in business studies, simulations are praised for being equally effective in developing soft skills such as team building, negotiating, self-efficacy, planning and decision making (Tompson & Dass, 2000; Coffey & Anderson, 2006; Betts & Knaus, 2006). Their big advantage is that they emulate real-life situations, where humans need to use their communication skills and persuade others in talking the right decision. This process involves both social interaction and planning skills, while students are challenged to participate by the competitive nature of the scenarios. As a result, students can develop the soft skills related to the task and more importantly increase their "self-efficacy" (Bandura, 1997) in doing so. With simulations students feel more confident in effectively engaging in a team and in fulfilling tasks related to organisation and management. And the more the students engage with content and problem-solving, they become more confident and more satisfied (Granitz & 2021).

Business simulation games are exposing students, who are usually specialise in a specific discipline of business and have limited understanding of the complexity of business operations, to various interconnected functions (finance, marketing, HR, etc.) which occur simultaneously is industry-level life (Seethamraju, 2011). By assigning business roles to students (e.g. CEO,

marketing manager, etc.) it gives them the opportunity to explore the connection of different roles and functions within businesses, something which cannot be easily explained by studying theoretical frameworks. Additionally, several studies have demonstrated how BSGs can further improve and enhance leadership skills among students - and especially millennials (Badibanga & 2021), while focusing on sustainability (Gatti et al, 2019; Gawel, et al 2022).

2.2 Use of BSGs in sport business programmes

Sport business degrees are often accused of not coping with the developments in the world of sports (Slack, 2014). Over the past years, several academics (Amis & Silk, 2005; Frisby, 2005; Doherty, 2013; Zervas & Glazzard, 2018) have called for more critical engagement with contemporary challenges in sport management/business programmes, through research and community engagement. Similarly, Knoppers (2015) offers an explanation on how the critical lens of the sport sociology tradition would benefit sport management theory and Shaw and Hoeber (2016) criticise the effectiveness of sport management research designs. While this criticism has been perceived as the result of a rather narrow spectrum of critical management research outputs in sport management studies, in the present paper we argue that is probably also the result of a rather conservative (or absence of) critical pedagogical literature in the field, despite the notable exceptions (Zakus, Malloy & Edwards, 2007, Frisby, 2005). In the case of business simulations, while traditional business studies literature is "bursting" with research around their effectiveness and popularity, there hardly any studies exist on the effectiveness of BSG application in sport business settings.

In one of the very few relevant studies, Dryer and Rascher (2010) shared their experiences on using a BSG applied to sport management settings and highlighted very high levels of engagement, very good students' response in dealing with unpredictability and high

satisfaction levels from applying knowledge to practical industry settings. They concluded that simulations could be an excellent way of preparing students – the "gamer generation" – for the complexities of contemporary sport business industry. Simulations have also used as a way of enhancing sport marketing concepts due to their unique ability of recreating the multileveled environment of sport industry (Gillentine & Schultz, 2001).

As Light & Dixon (2007) argue, pedagogical developments should actively influence the learning process of sport management programmes, primarily aiming in the process. Surprisingly, despite the fact that BSG are used extensively in traditional business studies all around the world, there is still relatively little evidence on their use in sport business programmes and, even though the curriculum, the learning objectives and some of the modules are quite similar. This paper aims to investigate the use of BSG in sport business programmes, using ZPD as its main theoretical lens and through a small-scale case study conducted in a metropolitan UK university. In doing so, we are using pedagogical theories and theoretical arguments from previous research on BSGs to illuminate the benefits from and enablers of successful implementation of BSGs in sport business courses.

3. Methodology

In order to fulfil our research aim we followed a mixed methods case study approach (Walton et al, 2020) and designed a two-stage research design (Söderman & Dolles, 2013), with one qualitative and one quantitative component. In both stages, we followed an inductive approach, trying to develop knowledge through our primary research. For this reason, even in the quantitative part of the study we didn't develop research hypotheses but tried to explore and understand phenomena and best practices. The case study we are analysing consists of a well-established undergraduate sport business (BA Sport Business) course in UK metropolitan university. Following a pragmatic research philosophy, we initially designed and executed a primary quantitative survey with the use of a structured questionnaire (Parasuraman et al, 2006). The questionnaire was disseminated to all 35 students that took the class and participated in the simulation game. Out of the 35 students in the cohort, 29 completed the questionnaire (response rate: 82.85%). The completion of the questionnaire was carried out online (google forms).

The questionnaire included scales that captured variables identified as important in the literature on the use of simulation games in higher education. We only used previously developed and validated scales to capture all variables. Specifically, to measure the quality of group work we adapted a 4-item scales developed and adapted by Buila, Catalánb and Martínez (2019) and Xu & Yang (2010). All scales' items were Likert type, with the anchors Strongly Disagree (1) to Strongly Agree (7).

After collecting and analysing the quantitative data, we carried out the qualitative part of our research, which aimed to offer additional knowledge on how the simulation game was facilitated and the benefits students perceived from its use. Specifically, after the end of the module's delivery, we conducted in depth semi-structured interviews with eight students that

participated in the module and the simulations game. The interviews lasted 35-40 minutes and were conducted with the help of a topic guide (Roulston & Choi, 2018). The interview outline aimed to get a further insight on the study's research aims. The outline included open ended questions on student satisfaction, engagement and their general feelings on learning through the simulation.

4. Analysis and Findings

4.1 Quantitative study

4.1.1 Validity reliability and descriptive statistics

Aiming to test our scales' unidimensionality, validity and reliability we carried our Exploratory Factor Analysis (EFA) with the use of the varimax method and calculated the reliability coefficient Cronbach alpha. As shown in Table 1, all factor loadings were found above 0.8 which indicates that all multi-item scales are unidimensional and valid. The Cronbach alpha coefficient was also found above 0.8 for all scales, which means that all scales can be considered internally consistent (reliable). Since all scales were found reliable and valid, we then calculated an overall score for each scale using the arithmetic mean of their items. The descriptive statistics of all aggregated scores are also shown in Table 1.

Insert Table 1

4.1.2 Factors influencing skills improvement, student engagement and module performance

In order to identify the factors influencing three very important desired module outcomes (skills improvement, student engagement and module performance), we ran three linear regression models, using each of the three potential module outcomes as an independent variable for each model (Table 2). In all three models, we used three potential factors of

influence we identified in the relevant literature as independent variables, namely support from the student's assignment group (Aithal & Kumar, 2016), support from tutor (Avramenko, 2012) and satisfaction from the simulation game (Pratt & Hahn, 2016).

As indicated from the regression analysis results for the first model, students' perceptions on whether their skills were improved is influenced significantly by the support they received from their study group (b = 0.307, T = 2.035, p < 0.10) and by their satisfaction with the simulation game (b = 0.568, T = 4.347, p < 0.001). The influence of tutor's support was not found significant (p > 0.10). The model fits very well with our data as the value of the regression coefficient R^2 is 0.871. According to results of the analysis for the second model, students' perceived performance in the module is influenced positively and significantly by the support they received from their study group (b = 0.516, T = 3.149, p < 0.01) and by their satisfaction with the simulation game (b = 0.495, T = 3.493, p < 0.01). Similar to the first model, the influence of tutor's support was not found significant (p > 0.10) and the model fits very well with our data as the value of the regression coefficient R^2 is 0.848. These results of the first two regression analyses are consistent with the existing literature that suggests that simulation games are better used as a form of independent learning (Yasin & Hafeez, 2018). They also adhere to conclusions deriving from theory on the Zone of Proximal Development (Wertsch, 1984).

The third model's result indicate that students' engagement with the simulation game are influenced by tutor's support (b = 0.483, T = 2.752, p < 0.05) and students' satisfaction with the simulation game (b = 0.427, T = 2.769, p < 0.05), but not influenced by group support (p > 0.05). The fit of the model to our data was substantial (R^2 = 0.820). These findings are

interesting because they indicate that tutor's support, although not influential for the other module outcomes, can increase students' engagement with the process.

Insert Table 2

4.2 Qualitative study

Overall, the students we interviewed felt that the simulation was very engaging and provided a relaxed and challenging educational environment. The notion of high engagement came up several times during and by the majority of students, either as a really exciting way of learning, or as the better alternative to other learning and assessment methods (e.g. essays, reports). One student particularly noted: *"(simulation) I think it was a lot more relaxed and a lot more engaging… certainly much better than everything else* [essays, reports, presentations] *we did so far"*. In addition to this most of the students felt that they performed better and with less effort in comparison to other modules, which did not include simulation.

Another important aspect, which came up in in most interviews with the students, was the notion of feeling independent while collaborating with peers. The important finding here is that while students acknowledged the necessity of having the tutor available anytime for support and guidance, they felt that they were learning while exploring with their peers and that the role of the tutor was more pastoral and less of a provider of knowledge. Notably one student noted: "*the exploration, trying to find your own things, I felt it was a challenge to get your head round and understand, but at the end that was the best thing and it was me with my friends who did it*". When the same student was asked about the role of tutors, she added: "*they were supportive and it was nice having them around, but don't get me wrong …they felt less important with this* [the simulation]". Adding to this, all students agreed that they felt more empowered, while using the simulation, even if some did not feel as confident to make decisions.

Finally, some other notable points came across, like the opportunity, which the simulation gave to some students who do not particularly like traditional assessment methods, like essays and presentations, and how this increased their overall satisfaction over their degree. As one student noted: *"I didn't expect to like it, because I don't normally like working outside of the class, but this one was cool. I think I learned a lot".* Some students also commented the fact that the simulation could possibly provide a blueprint of how to operate within a working environment and how this increased their confidence and self believe. In summary, the qualitative data validating the results of the quantitative study and offered a better understanding on why student outcomes, such as skill development and module performance are better achieved through successful team-work, independent learning and student engagement.

5. Discussion and implications

Our paper explores the use of Business Simulation Games (BSGs) in sport business university courses. Its contribution to the relevant literature and general discourse is twofold: a) it expands previous conclusions and arguments on the effectiveness of the use of BSGs in business schools (e.g. Faria, 2001; Xu & Yang, 2010), by confirming their positive influence in a sport business context and b) it identifies conditions and factors that facilitate the teaching and learning experience when Business Simulation Games are used. Following a case study approach, we collected both quantitative and qualitative data to critically analyse the two themes. Regarding the first, our findings suggest that when a simulation game is used in a sport business course, students' satisfaction by it has a very positive influence on their skill development and module performance. More interestingly, the use of BSG also increases their engagement with the learning process, which is a very important pursue in HE (Kahu, 2013). These findings are consistent with previous research indicating that BSGs improve student

outcomes, merely through the increase of their engagement and motivation to co-create knowledge (Coffey & Anderson, 2006).

The second important contribution of our study pertains to the identification of the facilitating factors when implementing a BSG in a sport management course. Specifically, as our findings indicate, students develop their skills and perform better, not only when they enjoy the simulation game, but also when they believe that the quality of group work within the game was high. The role of the tutor wasn't found important in improving their skills and performance, although students do believe that a good tutor can improve their engagement with the learning process. From this conclusion it becomes apparent that students view simulation games more as an effective independent and group learning exercise than an instructor led one. Successful BSG implementation, therefore, should help student enter the *zone of proximal development (ZPD)* (Vygotsky, 1978) and enable successful group work, moving towards a more student centric approach.

Additionally, this study highlighted that the notion of exploration, which is integral to BSG, increases the feelings of enjoyment of students taking part in it; and consequently the effectiveness of learning and teaching. More specifically, learning through BSG gave students a sense of ownership – being able to explore and take decisions independently and with their peers – and it was highlighted by many as "*our thing*", something which seemed to give students much satisfaction and pride. Ownership has been proven to be an integral part of an experience enjoyment (Tompson, & Dass, 2000). The reason for that pertains to the process of taking control, or "immersing" in the learning process has already been discussed (Matlay, Tunstall, & Lynch, 2010; Worthington, 2018), but all these studies involved "non-sport" business students using "non-sport" BSG. In this case, sport business students were

using a BSG, which was not designed, or had elements of "sport". This gives them a sense of relevance to their interests, educational goals and development aspirations and therefore gave them additional motivation to engage and immerse in the experience. Any previous attempts to integrate simulations, or games into sport management pedagogy revolved around existing mainstrean sports games (see Kretschmann, 2012), or specially adapted simulations with rather superficial sporting elements (Dryer and Rascher, 2010). This study highlighted that non-sport BSG games can be equally effective in sport business students in terms of engagement, enjoyment and essentially effectiveness. It becomes apparent, therefore, that, likewith real life case studies and other interactive learning practices, BSG is a learning and teaching tool which can be used and applied effectively, irrespectively to its incepted purpose.

This study, despite its limitations, has showed that BSG can be effectively used in sport business programmes as an exciting alternative to established learning and teaching methods, similarly to "traditional" business degrees (Ben-Zvi, 2010; Xu & Yang, 2010; Buila, Catalán & Martínez, 2019). They can contribute towards a more student-centred and student-led pedagogical approach in sport management degrees, potentially contributing towards widening the scope and breadth of future research in the field. Through this study we like to believe that we join the call for more inclusive, student led and anthropocentric research in sport management degrees (Amis & Silk, 2005; Frisby, 2005; Doherty, 2013). BSG can contribute to this - despite the fact they are a profit-oriented algorithm – due to their inherent ability to promote confidence (self-efficacy) and companionship (social constructivism) in learners. These two have many times been highlighted as important educational goals that lead to increased student engagement and performance. This means that increasing themcan expand the pedagogical spectrum of sport management degrees and unearth esoteric personal values and social tensions between groups of people, or even remove the focus from dogmatic

profit/achievement-oriented toolkits, which dominate the curriculum. As this study demonstrated, it's not the tutor, nor the module syllabus driving the learning process in BSG; it's the students themselves as conscious parts of a social group exploring and enquiring. And we are probably far from exploiting the full pedagogical potential of BSG, but we argue that sport management programmes ought to give them a try.

6. Limitations and suggestions for future research

Our study is not without limitations, most of which offer directions for future research. The first limitation derives from the relatively narrow scope and small sample size of our study. The current paper is based on a single case study of an implementation of a BSG in a sport business module. Future research should use larger samples of students from different types of courses. This will not only enhance the generalisability of the findings, but also enable comparisons amongst modules, courses and subjects. Another limitation pertains to the fact that we have only explored the influence of BSG on superficial student outcomes (module performance, skills development etc). Future research should try to provide deeper understanding on how this type of learning and teaching could lead to more significant professional and personal student transformation. For instance, our data offered some initial indications on the fact that BSGs can be used in order to raise and explore issues on ethics and sustainability (social, environmental) and future research should explore how this could be done in various business related academic subjects.

Additionally, as mentioned above, the simulation which was used as part of this study was not originally designed for sport business curriculum. To be more precise, this is not just a limitation of this particular study, but a limitation of most, if not all, BSG as it would be extremely difficult to design a data base matching the unique characteristics of sport (e.g.

unpredictability, perishability, fan loyalty etc.). It would be very interesting to explore how BSG can be adapted to reflect sport achievement, changing trends in participation, or even changes in social and political tensions (athlete protest etc.). Still, there are clear signs that BSG in their current form can be incorporated in sport management curricula as an extension of the business provision. We argue that future research should build on this and further investigate the application of BSG in other areas of sport business such as sport events, sport media and sport entrepreneurship. Furthermore, with the steady rise of esports, BSG and other forms of multiplayer games can be used to further research this new exciting form of professional sport.

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Table 1: *Scales' validity, reliability, and descriptive statistics*

Variables	Factor Loading	Cronbach alpha	Mean	Std. Deviation
Group Support		**0.897**	**5.525**	**1.436**
The unique skills and talents of all the members of my group were fully valued and utilized, by using the business simulation game	0.879			
My group's work integrated all the different opinions of the group members	0.947			
We regularly took time to figure out ways to improve our work processes and performance	0.905			
Members of our team asked each other for feedback on their work	0.798			
Skills Improvement		**0.950**	**5.137**	**1.451**
I was able to build more confidence in oral presentation	0.750			
I was able to increase my ability to write technical report	0.631			
I learnt to make decisions from multiple sources	0.919			
This experience enabled me to enhance real-world knowledge and skills	0.920			
The business simulation game has deepened my learning	0.926			
The business simulation game helped me clarify my career interest	0.817			
The business simulation game increased my confidence in my ability to work within a team	0.885			
I learned how to make decisions in a professional level	0.929			
The business simulation game has enhanced my confidence in my IT skills	0.825			

Through the simulation, I've learned to help people resolve conflicts	0.739		
Satisfaction from Simulation Game	**0.947**	**5.198**	**1.690**
Business simulation games allow me to complete my studies faster.	0.919		
Time flies when I use business simulation games	0.938		
I feel that my performance is better when I use business simulation games	0.945		
Business simulation game helps me improve my results	0.916		
Support from Tutor	**0.869**	**5.413**	**1.476**
I feel I received a lot of support and feedback by my tutor(s) during the simulation	n/a		
My tutor(s) support was essential in learning and dealing with the business simulation game	n/a		
Performance	**0.967**	**5.431**	**1.859**
I believe that my performance in the module (which involved the simulation) was high	n/a		
I am satisfied with my performance in the module(s) (which involved the simulation)	n/a		
Engagement	**n/a**	**5.517**	**2.131**
Overall, I felt more engaged by using the business simulation game.	n/a		

Table 2: *Results of linear regression analysis*

	R^2	R^2adj	Beta Coefficient	T	Sig.
Dependent variable: *Skills improvement*	0.871	0.856			
Group support			0.307	2.035	0.053
Tutor support			0.111	0.749	0.461
Satisfaction with simulation game			0.568	4.347	<0.001
Dependent variable: *Module performance*	0.848	0.830			
Group support			0.516	3.149	0.004
Tutor support			-0.048	-0.296	0.770
Satisfaction with simulation game			0.495	3.493	0.002
Dependent variable: *Student engagement*	0.820	0.799			
Group support			0.048	0.267	0.792
Tutor support			0.483	2.752	0.011
Satisfaction with simulation game			0.427	2.769	0.010