WHAT DO STUDENTS THINK?: COMPARING AND CONTRASTING FOUR STRATEGIC MANAGEMENT SIMULATIONS

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ABSTRACT

Qualitative data was collected from eight capstone undergraduate online strategic management classes (263 students) taught from Summer 2020 to Summer 2023. Students in each class played one of four strategic management simulations: Hubro Business, Strategic Management-Bikes (Marketplace Simulations), The Business Strategy Game, or Capstone 2.0 (Capsim). An analysis of student responses demonstrated the following: 1) Students primarily valued realism, competition, and teamwork in simulations; 2) More complex simulations were not considered more realistic; 3) Students did not prefer relatively simple simulations to relatively complex simulations, as long as they had adequate support.

INTRODUCTION

Business simulation methods help develop students' professional skills and competencies by linking the academic and business environments (Brazhkin & Zimmerman, 2019). They provide a complex decision-making setting in the classroom with the goal of improving their learning outcomes (Wei, 2023). Researchers have also found that simulations effectively engage students in learning and improve their course performance. Simulation bridges the gap between theory and practice (Faria & Wellington, 2023). Simulation projects can enhance students' critical thinking abilities and build their ability to respond confidently to complex decision situations and make sound business decisions (Faria & Wellington, 2023; Wei, 2023).

To maximize the learning potential of business simulations, instructors should consider the student perspective in making their selections. Several researchers have conducted extensive studies of professors and their experiences, and have made recommendations (Faria & Wellington, 2023). However, there is a scarcity of research that has investigated simulations from the learner's perspective. One example is Wei (2023). However, this study focused on MBA students learning. It also addressed a single marketing-focused simulation. This exploratory study extends this stream of research by studying undergraduate students and examining four different strategy simulations.

The 'Experiential Learning Theory' (ELT) that was developed by Kolb (1984) provides insights into how simulations can help both educators achieve their pedagogical goals and support students to meet their learning goals. Kolb (1984) proposed four stages of learning that form a virtuous cycle of concrete experience, reflective observation, abstract conceptualization, and actual experimentation. The learning loop continues with more demanding learning in each subsequent cycle (Kolb, 1976). Simulations with Kolb and Kolb's (2009) learning loop promote in-depth learning when used as an experiential learning technique. Simulations stimulate students' learning by providing concrete experiences on which students can observe and reflect, leading to actual experimentation, new knowledge, and different learning experiences through cooperative learning. This collaborative and problem-based learning offers deeper level learning than traditional lecture-based pedagogy (Gibbons, Fernando, & Spedding, 2022).

In the case of strategic management simulations, this learning loop takes place over the course of three phases - conceptualization and planning, implementation, and post-performance (Zantow, Knowlton & Sharp, 2005). As Zantow et al. (2005) note students are allocated into teams, and each team decides how to manage their virtual company. Each decision determines how that particular company will operate during a specific period, which is often an academic quarter or semester. These decisions cover a variety of business activities and functions, such as marketing, finance, production, sales, and human resources. The decisions of all teams are uploaded into the simulation software, which then calculates the performance of each company based on each team's decisions and the decisions of other competing teams. The software's algorithm utilizes all decisions to calculate each team's performance relative to their competition. Results are available in report form so that each team can see the detailed performance of their company alongside some general performance measures of their competitors.

This cycle of making decisions and obtaining results occurs repeatedly over 6-10 decision cycles in most strategic management simulations. During conceptualization and planning, students develop a group structure and an understanding of the overall environment and how their simulated firm will operate. In the implementation phase, they execute strategies and tactics

developed during conceptualization and planning, and in the following post-performance phase, they reflect on their performance as managers (Zantow et al., 2005). As a result, students are able to deepen their learning over each decision cycle, with the opportunity to amass significant in-depth capabilities over the course of the entire simulation.

One of the keys to creating and maintaining these virtuous cycles and learning loops is student engagement. We suggest that certain features of simulations may enhance student involvement and engagement and therefore, facilitate the successful initiation and continuation of these desired virtuous cycles and learning loops. Although the educator's viewpoint is necessary, researchers have found that student enjoyment and satisfaction enhanced learning (Brazhkin & Zimmerman, 2019; Hughes & Scholtz, 2015). Dietz, Fox, and Fox (2022) found that team participation increases student interaction and involvement in simulations. We aim to contribute to this stream of research by exploring student preferences with regard to simulation characteristics. Specifically, we examine the following research question: What simulation characteristics do students prefer?

METHODS

Since the goal was to obtain a greater understanding of student preferences regarding simulations, the research was designed with three key points. First, this study employed an inductive qualitative methodology in which key themes were allowed to emerge (Miles & Huberman, 1994). This methodology is appropriate when relatively little is known about a topic (Miles & Huberman, 1994). Second, student preferences regarding multiple simulations were obtained in order to facilitate comparing and contrasting responses and increasing the validity of the data. Third, consistency was established by collecting data from multiple sections of the same undergraduate strategic management class taught by a single professor.

Students in eight online undergraduate strategy capstone classes taught from summer 2020 to summer 2023 were surveyed. Only business students within two semesters of graduation were eligible to take this class. A total of 263 students filled out the optional simulation evaluation questionnaire posted on the class website upon the completion of the course. Students who completed the questionnaire were eligible to earn five points extra credit. Participation ranged from 71-85% of the students in each class. The qualitative questionnaire consisted of three open-ended questions in which students were asked: 1) what they liked about the simulation, 2) what they disliked about the simulation, and 3) what they would like to see changed about the simulation.

The computer simulations selected provided the students with the opportunity to deepen their understanding of the interaction of multiple business functions and the importance of taking a comprehensive view when developing and implementing strategies to gain market share and maximize profits. The simulations were Hubro Business Simulation (two classes), Marketplace Simulations Strategic Management (two classes), Capsim Capstone 2.0 (two classes), and The Business Strategy Game (two classes). These simulations are widely used in strategy capstone courses since they capture the complexity of reality with its overlapping decisions, deadlines, and financial constraints. Exhibit 1 provides details on the classes and simulations examined.

EXHIBIT 1
On-Line Strategic Management Classes and Simulations

Term	Class Size[1]	Response Rate[1]	Strategy Simulation	Rounds	
				Practice	Competition
Spring 2022	39	79%	Hubro Business	4	16
Spring 2022	40	83%	Hubro Business	4	16
Summer 2023	45	87%	Strategic Management/ Bikes	0[2]	6
Summer 2020	42	71%	Strategic Management/ Bikes	0[2]	6
Fall 2020	39	85%	The Business Strategy Game	2	9
Fall 2021	38	71%	The Business Strategy Game	2	8
Spring 2021	43	74%	Capstone 2.0	2	8
Spring 2023	45	84%	Capstone 2.0	2	9

[1] Total class size n=331; overall 79% response rate
[2] Students completed 9 microsimulations throughout the course in lieu of practice rounds

In each class, students were randomly assigned to teams of three or four. Students were offered an introductory lecture and demonstration of the simulation and were required to make periodic (weekly or bi-weekly) decisions regarding a variety of functional areas such as sales, marketing, production, and finance as a team. Since reflection is part of experiential learning, each of the students was required to complete an assignment sharing what they learned from their experience with each simulation. This required assignment was distinct from the qualitative questionnaire evaluating the simulation. Students were graded on their level of participation in the simulations and their essays on what they learned. Students on teams that were top

performers in the simulations received bonus points; strong team performance was not required for students to earn top grades in the class. Participation in the simulation represented 40% of the total grade. Accordingly, each student participated in one of the four simulations.

The data were coded as follows. First, student responses were categorized into three broad themes: 1) what students liked, 2) what students disliked, and 3) what they would change if they could. The text from student responses was placed in these broad themes. Second, similar responses were grouped under a single code. The number of student responses in each code and the percentage of students providing that response was calculated. Results are illustrated in Exhibit 2.

EXHIBIT 2
Key Codes in Student Responses

Strategy Simulation	What Students Liked	What Students Disliked	Recommended Changes
Hubro Business (n=64)			
	Competition – 17 (27%)	Limited choices – 13 (20%)	More customization – 10 (16%)
	Teamwork – 15 (23%)	Repetitive – 5 (8%)	Improved bot advisors – 5 (8%)
	Realistic – 14 (22%)	Too short – 3 (5%)	More decisions per week – 2 (3%)
	Easy to understand – 12 (19%)	No change – 2 (3%)	Real time dynamics – 3 (6%)
	Simple, clean interface – 8 (13%)		
Strategic Management-Bikes (n=69)			
	Realistic – 26 (38%)	Bikes as a product – 7 (10%)	Different industry – 4 (6%)
	Microsimulations – 17 (25%)	Too simple – 6 (8%)	More training videos – 4 (6%)
	Competition – 11 (16%)	No change – 5 (7%)	Add challenges, disruptions – 2 (3%)
	Designing product – 9 (13%)	Too short – 4 (6%)	Allow decisions to be edited – 2 (3%)
	Warnings – 6 (9%)	Waiting for other teams – 3 (4%)	
The Business Strategy Game (n=60)			
	Realistic -16 (27%)	Too complex – 8 (13%)	More video, tutorials – 11 (18%)
	Competition – 12 (20%)	Layout too busy – 4 (6%)	Improved features – 4 (6%)
	Teamwork – 6 (10%)	Technical challenges – 6 (10%)	
Capstone 2.0 (n=70)			
	Realistic – 22 (31%)	Hard to understand – 13 (19%)	More training – 15 (21%)
	Teamwork – 15 (21%)	Not knowing how to improve – 12 (17%)	More practice rounds -11 (16%)
	Competition – 14 (20%)	Repetitive – 4 (6%)	Real time dynamics – 5 (7%)
	Lots of data – 11 (16%)	Large time commitment – 4 (6%)	
	Practice rounds – 10 (14%)	No change – 4 (6%)	

KEY FINDINGS

A review of the results in Exhibit 2 reveals several interesting findings. First, the vast majority of students enjoyed the simulation exercises and found them challenging and engaging. They reported that the simulations were quite valuable in providing them with insights into running a business and competing with rivals. In particular, they valued the opportunity to experience how multiple functional areas were interrelated and to see how each area contributed to the market share and profits of the companies they managed. Even students who offered criticisms and recommended changes thought that the simulation was useful. Additional evidence of student enjoyment is evident from the fact that the items that students liked about the simulations outweighed the items that they disliked and/or wanted changed (see Exhibit 2).

Second, each of the simulations was valued for being realistic. Students consistently mentioned that they viewed the simulation as allowing them to experience what executives face in actually running a business. Surprisingly, the more complex simulations were not necessarily perceived to be more realistic than simpler simulations. If complexity is based on the number of decisions (Faria & Wellington, 2023), then the Business Strategy Game would be the most complex (up to 40 decisions), followed by Capstone 2.0 (up to 20 decisions), Strategic Management – Bikes (approximately 10 decisions) with Hubro Business (4-6 decisions) as the simplest. However, Strategic Management-Bikes received the highest score on being realistic (38%), followed by Capstone 2.0 (31%), and the Business Strategy Game (27%), with Hubro Business (22%) receiving the lowest score. Hubro Business may have been perceived as being less realistic due to its futuristic product - jetpacks - since the other simulations had existing products, such as bikes, athletic footwear, and sensors.

Third, students did not prefer simpler simulations to the more complex simulations. Although they did note that Hubro Business was easy to understand (19%) and that the Business Strategy Game and Capstone 2.0 were too complex (13%) and too hard to understand (19%) respectively, the more complex games did not receive substantially more negative comments. Students requested greater aid and assistance with these games. The simpler games were criticized for being too simple (8% - Strategic Management -Bikes) and too limited in choices (20% - Hubro Business). When students viewed the simulations as simpler, they requested additional challenges in the form of longer durations and more options for decisions.

Finally, a few students recommended additional challenges in the form of adding external changes in the environment and speeding up the pace by incorporating real-time results for three of the four simulations. No additional challenges were requested for the Business Strategy Game. One of the key motivations for these additional challenges was to disrupt potentially repetitive steady states, in which teams were unable to substantially improve their standings in the game.

As with all research, this study contains limitations that affect the generalizability of these findings. First, each simulation was evaluated by a different set of students. Therefore, to the extent that these sets of students varied in their preferences, strengths, weaknesses, and academic experience, the responses across simulations were not completely comparable. However, the fact that all students were at the same point in their undergraduate studies and were taking the same class from the same professor provided some level of standardization in the data collection process. Second, the open-ended nature of the questionnaire allowed students to comment on aspects of their simulation experience that did not directly relate to the simulation itself such as interactions with team members, comments and critiques of their own and other team strategies and performance, and discussion of the course in general. As a result, some student responses were less valuable. However, the relatively large sample size aided in mitigating this problem.

DISCUSSION

This exploratory study suggests that, in the context of strategic management simulations, the key benefits of simulations that students value – realism, competition, and teamwork – can be obtained in both relatively simple and relatively complex simulations. It appears that it is the hands-on learning by doing that students find most compelling. Nevertheless, students did not shy away from highly complex simulations if they could access sufficient training and support. Instructors should feel free to offer difficult simulations, knowing that their students can meet these challenges, and to offer more accessible simulations, knowing that their students will appreciate the opportunity to apply their learning.

Interestingly, students offered some ideas on how to avoid and/or break out of potentially, repetitive steady states. Faria and Wellington (2023) indicate that team rankings tend to become fixed between four and six rounds and recommend that simulations end shortly after six rounds. However, several students recommended environmental shakeups and/or more real-time action to inject new excitement into the simulations. Incorporating these ideas could potentially allow simulations to be more exciting for longer periods.

We contribute to the stream of literature on the student perspective on simulations in two ways. First, by offering insights into strategic management simulations, we expand the knowledge base beyond marketing simulations, which dominate much of the research. Second, we show how a better understanding of the student perspective provides instructors with valuable information on the selection and use of simulations.

This study opens up new avenues for investigation. Future research could provide a specific, detailed questionnaire based on the themes uncovered in this study for students to complete. This quantitative approach would allow the calculation of specific statistics as in Wei (2023). In addition, future research could delve more deeply into the different dimensions of realism to better understand what students value most. For example, realism could mean accurate replication of industry and/or firm conditions, a departure from the lecture-discussion classroom experience, or both. Also, since this study was limited to online classes, future research could investigate in-person and/or hybrid classes to determine if class modality impacts the results.

In conclusion, although this qualitative study is exploratory in nature, it provides further confirmation of the power of simulation as an active form of learning with its unique capability of allowing students to make decisions and see the results of those choices in a timely manner.

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