Using a business simulation to teach applied skills – the benefits and the challenges of using student teams from multiple countries

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Abstract
The Business Strategy Game is a PC-based simulation that gives the players experience in developing and implementing strategies. The students run their company in a competitive market setting against other teams. This forces them to take risks and anticipate competitor strategies. This paper is based on an international simulation game involving five teams of postgraduate business students from universities in Ireland, France and the US. The game was run in a "virtual environment" using e-mail and videoconferencing. The attempt was made to simulate realistic competitive conditions as much as possible so that the concepts learned and solutions generated could be transferred from the classroom to the outside business environment.

Background

This paper is based on an international simulation game involving five teams of postgraduate business students from universities in Ireland, France and the US run over a 12-week period in 1998. The game was run in a "virtual environment" using e-mail and video conferencing to overcome the physical distance between the participants. The Business Strategy Game is a PC-based simulation, which gives the players experience in developing strategies, decision making, team building and core marketing skills. The students run their company in a competitive market setting against other teams. This forces them to take risks and anticipate competitor strategies in addition to developing and implementing their own team strategy.

Even though educators are constantly striving to bring management education closer to reality, the media of learning still tend to polarize into two scenarios: lecturing about business; and training in skills. This polarisation means that the context of learning remains artificial and it is difficult to reproduce the characteristics of a working situation in the classroom. Therefore if the aim of the educator is to prepare the student for the workplace, in the sense that all learning is meant to be translated back into the workplace, a large gap remains.

It is the view of the authors that this gap can be narrowed by the use of business simulation games. This paper therefore focuses on the experience of the authors in running such a game across national boundaries using teams from different cultures in vastly distant locations.

The arguments for and against simulation games

There is a relatively extensive literature dealing with the topic of student learning in the simulation environment. Many articles focus on and question the validity of the simulation for teaching purposes (e.g. Greenlaw and Wyman, 1973; Wolfe, 1985). Thorngate and Carroll (1987) raised several key concerns about the use of simulations in a classroom context. They found that luck correlated with the number of contestants in determining a winner, contest structure made no noticeable difference in the overall chances that the best person would win, and the effects of luck may be attenuated but not eliminated. The implication is that learning and performance are unrelated. On the other hand, Keys and Wolfe (1990) concluded that games are internally valid for a strategic management course, and Wolfe and Roberts (1993) have argued that simulation games have external validity in predicting future career success of players.

Whiteley and Faria (1989) concluded that simulation games are effective in improving quantitative skills but not in improving the acquisition of applied or theoretical knowledge. Wellington and Faria (1991) suggested that the pedagogical value of simulations should be focused on the development and acquisition of decision-making and interpersonal communication skills.

Learning and games

Action learning "aims to enhance the capacities of people in everyday situations to investigate, understand and if they wish, to change those situations in an ongoing fashion with a minimum of external help"

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(Morgan and Ramirez, 1983, p. 9). Therefore it is concerned with empowering people to act in a rational way and to develop critical thinking skills in attempts to solve real problems and take action in a purposeful and logical way (Brookfield, 1995). Neumann (1986) lists several instances in which critical thinking skills are necessary, including launching a "daring marketing tactic".

Games provide a structured environment for learning complex problems. According to Shubik (1975), most games in a professional context fall into the categories of teaching, training, operations and entertainment. Games used to replicate and teach models and processes that employ the use of a human in a particular role, actual or simulated are called simulation games (Shubik, 1975). Learning in simulation games occurs on many levels. Players learn from the contextual information contained in the dynamics of the game, the process of playing the game, through risk taking and weighing up the risks, benefits, costs, outcomes and rewards resulting from decision making.

Intuition and observation by academics involved in consulting would suggest that many marketing decisions in organizations today are made not by individuals only, but by groups (Nel *et al.*, 1996). These authors go on to state that marketing plans are not the work of an individual, but a planning team: planning teams scan the business environment; planning groups formulate marketing strategy and objectives; new products are originated and developed by new product groups; and advertising strategies are generally the result of collaboration between marketing, marketing research and advertising agency personnel. Therefore techniques that create and build team working and decision-making attributes in academic situations are essential in providing students with relevant career-based skills.

The advantages of simulations

Simulations are certainly widely used. One survey found that over 200 simulations were in use in the USA in over 1,700 business schools (Faria, 1998). Simulations have been claimed to be more realistic than alternative learning methods (e.g. Nel *et al.*, 1996) and various attempts have been made to measure the extent to which simulations do indeed capture the essential features of the real-world environment they attempt to replicate. Writers point out the varying interpretations of "realism" in simulations and some of the pitfalls in using simulations that are too complex (Gruntz, 1995).

Wolfe and Roberts (1993) offer the opinion that simulations are valid representations of the "real-world" issues facing managers and that the environment offered by simulations can be among the most realistic offered in off-the-job training. Senge uses the expression "micro world" to describe ways managers can "learn by doing" in a safe environment (Senge and Fulmer, 1993).

Simulations can be general purpose or tailor made for specific companies or settings (Fripp, 1994). General-purpose simulations can be used in a variety of ways, but tailored simulations use data and terminology appropriate to a particular company or industry, and consequently are often only understandable by those familiar with those industries.

A UK survey (Fripp, 1993) emphasised the following advantages:

- Users reported that simulations were stimulating and enjoyable, a clear prerequisite of learning.
- Frequently, simulations are a valuable basis for the demonstration and development of teamworking skills. This is particularly true where the teams involved are natural working teams drawn from the same organisation.
- Simulations can offer a risk-free environment at both individual and organisational level.
- Participants can deliberately try out new behaviours which they would not readily attempt at work, or take business decisions which would not be possible in reality for fear of failure.
- Variety. When used as part of a training or development activity, simulations add a valuable type of learning activity which contrasts with and complements other methods such as case studies or lectures.
- Experiential learning. Simulations can provide quick and unmistakable feedback and allow people to see the consequences of their decisions in "three dimensions".

Games and traditional teaching methods

Gilgeous and D'Cruz (1996) compare the use of games with traditional teaching methods. Briefly the comparisons were as follows:

- *The lecture*. Games are used to support rather than replace lectures. Information from lectures can be used in games to deepen a person's understanding of them. Learners are participants in a game and have a responsibility to motivate

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themselves, since the more effort they put into the game, the more they will learn. Acting out or simulating a real-life situation helps information to be learned through experience, and the many skills discussed can be practised.

Numerous concepts can be dealt with in one game, so that, instead of just learning about one thing, the whole subject area can be explored; this is far more interesting and promotes a larger scope of learning.

- *The case study*. A case study is usually a snapshot of a real company's situation at a given moment in time, with some other information included such as financial statements or company accounts. A game can also represent a snapshot of a hypothetical company controlled by the designer. The model that is designed can be used to generate any outcome from any possible solution proposed. In this way, participants can learn about the quality of their decisions directly. They can also see how decisions can result in constraints on future decisions. The advantage of a model which allows different approaches is that the game can be repeated or restarted with new ideas, whereas a case study can only really be used once.
- *The role play*. Games provide much more personal interaction than role plays, simply because of the teamwork aspect of many of them. Role plays are limited by the fact that individuals are presuming roles of which they have had very little experience, but the positions presumed in games are very real.
- *Grading*. Grading on simulation performance suggests a belief that people who perform best have learned how to play the game better. However, it is possible that those who perform best may simply have hit on the "correct" strategy, or improved through learning based in the struggle to improve. It is even possible that players who performed poorly for most of the game, but who conscientiously played the game, learned substantially (Washbush and Gosen, 1998).

Background of the project

The business schools of the three universities involved in this project (The National University of Ireland in Galway, Ireland, Group Ecole Supérieure de Commerce in Marseille, France, and Montana State University (MSU) in Bozeman, Montana, USA) had previously been connected through an active program of student exchanges. Those exchanges have been encouraged and supported in part by grants provided by the International Partnership for Reseach Innovation and Learning (IPRL) and the Foundation for the Improvement of Post Secondary Education (FIPSE). Faculty and academic administrators at each of the institutions were actively seeking additional opportunities for collaboration, and in the Fall of 1998 undertook the project reported on in this paper. The faculty at Montana State University (MSU) had considerable experience using the Business Strategy Game (Thompson and Stappenbeck, 1995) in an upper division capstone course taken by all business undergraduates, and provided the organizational and administrative support for the project.

The Business Strategy Game (BSG) is a widely-used computerized business simulation of the international athletic shoe business. The game, now in its sixth edition, allows students operating in small groups to control an independent company in competition with other companies in the same industry. The game requires the students to make numerous decisions regarding product pricing, production, marketing and all aspects of company operations in numerous decision periods. At the end of each decision period, decisions entered by the students are computer analysed and scored according to pre-set criteria. The analysis results in a variety of reports for each company, to include an end of period and cumulative income statement and balance-sheet, along with a wide range of management information regarding the competitive dynamics in the industry. Promotional material for the BSG opines that running a simulated company over a number of decision periods helps develop a student's business judgment and focuses on long-range planning. Students learn from their quantitative analysis, creative problem solving, and trying to unite production, marketing, finance, and human resource decisions into a coherent strategy (Thompson and Stappenbeck, 1995). The MSU experience with the simulation has been very positive and, given that the simulation is international in nature, with company production and sales in North America, Europe and Asia, the BSG seemed a likely vehicle to support collaboration and value-added learning experiences for the students and faculty in the partner institutions.

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Objectives

Primary objective

The primary objective of this research was to conduct an analysis of learning experience of the participants in terms of skills developed and used through the simulation.

Secondary objectives

- To identify key issues in the learning process in terms of the strengths and weaknesses of the simulation process.
- To evaluate the use of games in developing applied skill, e.g. planning and decision making.
- To recommend future strategies for learning in virtual environment through games.

Methodology

The primary research was conducted through a series of interviews with participants of the game. The interviews were conducted in a semi-structured way to allow the interviewee to place emphasis on points thought more relevant or pertinent to their learning experience. Second, the students were observed during their meeting while the game was in progress. Third, e-mail questionnaires were completed by the international participants.

Project parameters and objectives

Following discussion, the partner universities agreed that the initial iteration of the project would consist of the following elements:

- Use of "The Business Strategy Game".
- The MSU College of Business would provide the administration of the simulation, with teams submitting their decisions over the Internet.
- The simulation would run for approximately six weeks with each team submitting a total of ten decisions, each decision representing a year of operation of the company.
- Three interactive videoconferences would be conducted to allow student teams and faculty coordinators to interact.
- An evaluation of the process and learning outcomes would be conducted.

The agreed-upon objectives for the project were to:

- determine the technical feasibility of operating the game at multiple international sites;
- evaluate student and faculty impressions of the BSG using multiple international teams; and
- determine the desirability of making this international BSG exercise a regular part of recurring courses at our universities, and to include this sort of international collaboration on a regular basis.

Project execution and data collection

The project began in October 1998 and continued until early December of that year. A total of 30 students, organized into five company teams, participated from the three previously identified universities. The project began with an interactive video-conference, which oriented all faculty and student participants to the principles of the game, and provided instruction on the mechanics of entering decisions into the computer program. A few days following the videoconference, the first decisions were formulated by the student groups and then entered into computer files. Those computer files were then electronically compacted and sent to the project administrator in Montana via the Internet. Using software provided by the game publisher, the administrator analysed the decisions and provided reports on individual company performance and competitive outcomes in the industry back to the student groups via the Internet and fax transmissions. Following the first decision, one of the universities experienced difficulty in properly compacting the decisions for submission to the game administrator. This difficulty persisted for several decision periods and required the use of hard-copy fax transmissions, revisions to the schedule, and a reduction in the total number of decisions. Although this problem was quite frustrating, once it was overcome the decisions could be processed without difficulty.

During the course of the project, competitive advantage ebbed and flowed from one team to another. At least one team was temporarily bankrupted (to the delight of their European competitors, it was one of the US teams which had previous experience with the BSG). The technical difficulties with the transmission of decisions reduced the number of planned decisions, and the relative academic schedules of the partners prevented an extension beyond the previously planned ending date. At a video-conference following the final decision, participants and faculty agreed that, while the full number of planned decisions would have been desirable, sufficient decisions were undertaken to achieve the objectives of the project.

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A qualitative summative evaluation of the project was conducted. The set of questions which appears in the Appendix was submitted to each of the participants and the supervising faculty. Responses were submitted either by individual students or summarized by faculty advisors following a discussion with or on behalf of a student team. A content analysis of the responses identified the following recurring themes presented in descending order of frequency:

(1) There was a strong consensus around the proposition that the simulation was an overall positive learning experience for the students. There was an even stronger consensus that the use of international teams, particularly teams which had been able to at least meet each other via interactive videoconferences, made the experience both more interesting and engaging.

(2) There was a strong sense of frustration with the technical difficulties encountered transmitting the decisions to the administrators. Most participants were understanding of the difficulty, but it was clear that, if those problems had persisted, they would have significantly detracted from the learning process.

(3) The competitive nature of the simulation, perhaps augmented by national and regional sensibilities, added to student interest and energy for the project.

(4) There were equal measures of frustration and appreciation of the multi-dimensional nature of operating a company. A minority of participants felt that there was an over-emphasis on raising and optimizing capital, and at least one finance major described the process as one big marketing problem. More thoughtful observers recognized the importance of an integrated approach to gaining and sustaining competitive advantage.

(5) The students found the differences in national perspective very interesting. As an example, in the first decision period each team finds itself with an inefficient, high wage production facility in Ohio. The French teams, more sensitive to the political/social implications of business policy, were appalled by the willingness of the US and Irish teams to close the Ohio operation and to move the jobs offshore, in this case to Asia, with significantly lower labor costs. The French teams spent considerably more time and resources trying to minimize the negative impact of the inefficient plant rather than abandon or close it.

(6) Although the game includes production and sales in North America, Europe, and Asia, those areas are generally undifferentiated on any basis other than labor costs. The marketing-oriented participants in the project felt that the simulation should allow different approaches to these areas and their subdivisions so as to recognize their unique characteristics.

(7) The balance of the comments received made a variety of unique, generally unremarkable, points regarding the simulation. Approximately 80 per cent of the responses could be categorized as positive, 15 per cent as neutral, and 5 per cent as negative. Almost all the negative comments were associated with technical difficulties associated with entering and transmitting decisions.

Conclusions

The relevant research provides strong support for learning/teaching strategies which actively involve students in the process, and for those activities which accurately simulate those skills to be learned. Our experience in this relatively small pilot study with the Business Strategy Game leads us to conclude that it offers an opportunity to satisfy both of these objectives. Despite technical difficulties and challenges occasioned by the distances involved, we came away from this experience with a consensus of all involved that to involve teams across national boundaries is well worth the effort. The competitive dynamics and international teams added considerable value to the project.

Our experience leads us to the following advice for those considering a similar undertaking:

(1) There must be sufficient technical support at each site to ensure the ready compilation and submission of decisions. A Web-based version of the simulation would refine this problem and be of significant assistance.

(2) There must be a game administrator to compile decisions and disseminate results to participants. This person should be knowledgeable about both the technical and competitive dynamics of the simulation, and reasonably available to students and faculty advisors.

(3) The use of international teams added considerable interest and collateral learning experiences for the students and faculty involved. The use of an interactive videoconference at the beginning, mid-

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point, and end of the simulation added substantial value and interest to our process.

(4) It may be helpful to do a trial run of the simulation before formally integrating it into courses. This allows the administrator and participants to sort out technical difficulties and to familiarize themselves with the dynamics of the game administration and competitive processes.

Our positive experience with the simulation has persuaded us to integrate this simulation into the structure of our regular courses. Although this will not be without its challenges, we feel that the benefits clearly outweigh the costs.

The advantage of the simulation game was that elements of the "real world" were simplified and presented in a form which could be contained within the classroom. The attempt was made to simulate realistic competitive conditions as much as possible so that the concepts learned and solutions generated could be transferred to the outside business environment. The skills enhanced included strategy development, time management, team building and negotiation skills.

The players developed critical thinking skills that will better prepare them to plan future strategies as well as learning to apply the theories and models explored in the classroom setting. There was also the benefit of discussing intercultural issues which arose in the implementation of different decisions.

Overall, the problems encountered and decisions to be made represented the actual business environment and therefore could be used to enhance the critical thinking skills of managers in the workplace. In conclusion, games have benefits over some traditional teaching methods, but it must be stated that they should not be used as an exclusive alternative form of teaching and training because it cannot be guaranteed that all the lessons being taught were actually apparent.

Games are best used when complementing teaching and training methods, to act as an example or to reinforce lessons. They should not be used purely for the sake of including a game in the training programme. Without a specific purpose, the game ceases to be interesting and becomes a waste of time.

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Appendix

Interview guide for participants

(1) Do you feel that the game could do a better job of differentiating global markets? Specifically, what alterations could be made to better differentiate these markets?

(2) All operations were dollar denominated. How would you recommend setting the game up to allow for other currency denominations?

(3) What other suggestions do you have, if any, as to how the global dimensions of the game could be enhanced?

(4) What advantages (and/or disadvantages) do you see in playing the game with students from different countries?

(5) How successful were you in attaching and e-mailing files? What advantages do you see in having the game operate totally online?

(6) To what extent do you think the program actually "simulates" the real business world? What changes, if any, would you suggest to make it more realistic? For example, are there other types of decisions that might be added?

(7) How well does the simulation reflect topics covered in your business education? Are any of the functional areas over- or under-emphasized? Are any topics that you cover in your course not reflected in the simulation? If so, how might those topics be incorporated?

(8) How easily were your decisions processed by the game administrator?

(9) How accurately did the industry scoreboard seem to reflect each team's performance of strategic management tasks?

(10) How easy was it to understand the various reports? Are there any types of reports that should be added or deleted?

(11) Did you or other students encounter any "bugs" in working through the problems? If so, please describe the problem(s).