Reports & Communications

A Grounded Theory for Teaching Entrepreneurship Using Simulation Games

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A practical teaching difficulty provided the opportunity to turn a problem into a useful case study with generic implications for the pedagogical effectiveness of simulation games in teaching entrepreneurship. Students playing the simulation game submitted written assessments that became the units of analysis for a single-case research project. Analysis produced a grounded theory consisting of four attribute categories and associated properties required of a simulation game to make it an effective teaching device in entrepreneurship contexts. The theory provides at the very least a useful checklist for teachers of entrepreneurship and, potentially, a basis for developing a quality standard for educational simulation games.

KEYWORDS: *education*; *entrepreneurship*; *grounded theory*; *simulation*.

This article is not intended to demonstrate academic rigour but to provide a starting point for debate. It is, however, based on rigorous academic principles that are detailed in the full version of this article, obtainable from the author's Web site (www.swin.edu.au/agse).

I found myself in the position of using a simulation game that clearly was not fulfilling the learning objectives I had hoped to achieve by using it. In an effort to learn from the experience, I applied proven case research principles to attempt to discover a framework for evaluating simulation games for suitability for educational purposes. This article presents the result for comment.

I was assisted in my research by two experts in simulation games, Albert Angehrn and Joseph Wolfe, who felt that his study would make a useful contribution to developing a theoretical framework for pedagogical effectiveness of simulation games. They are coauthors of the full article.

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Context and research method

Context

In 1998, I was invited to the INSEAD business school in Fontainebleau, France, as visiting professor in entrepreneurship. This included teaching an elective course called "Starting and Growing Entrepreneurial Businesses," a course pioneered and hitherto taught by Professor Neil Churchill.

Having taught entrepreneurship for more than 10 years, I have found that experiential learning and generation of empathy for the "real-life" situation is a vital component of entrepreneurship education. This presents difficulties in teaching: The start-up and growth timeframe of a business tends to be longer than the timeframe of an MBA subject. I felt that a simulation game could be an effective way of generating empathy for the rapidly changing growth phase of a business, and I decided to modify the subject to include such a game.

Based on feedback on field tests by colleagues, I selected SKY HIGH. It simulates, in six rounds of play, 6 months of competing air carriers' operations. In the context of the INSEAD program, it was run with four teams over a 6-week period as part of a 16-week course of weekly classes lasting 1 ½ hours.

The simulation takes the form of an in-basket exercise. At the beginning of each simulated month, each team has to deal with a large amount of managerial correspondence and market information, requiring various levels of actions, reactions, and interactions. Each team's responses to their company's in-basket are entered into the SKY HIGH software, which ranks teams by their profitability, market share, and management competency. The last of these three rankings was of most interest, because the objective of the course was to give an understanding of the complexity of the human interactions involved in a growth business.

The students all had previous exposure to simulation games through a game developed by INSEAD's Joseph Bissada, which was used in the core marketing unit of the MBA program. Many had also played a simulation game, developed by Albert Angehrn. Because the entry criteria to the INSEAD MBA program are among the most stringent in the world, both the caliber of students and their learning expectations were very high.

Experience

Unfortunately, the newness of the game translated into unreliability of operation. The software would not accept certain legitimate inputs, and the rankings it generated could not be readily related to the inputs entered. After two rounds, the students were rapidly losing faith in the credibility of the game and expressing dissatisfaction with the learning experience.

It happened that Joseph Wolfe, a leading researcher into the use of business games in management and entrepreneurship education, had been invited to present a seminar on the state of research with respect to the efficacy of simulation games as pedagogical

instruments. I attended this lecture and saw an opportunity to turn a suboptimal teaching exercise into useful empirical research aimed at developing a grounded theory of the effectiveness of simulation games in teaching entrepreneurship. Wolfe agreed to help, and together with Albert Angehrn, we modified the game for this purpose.

I invited students to continue with the simulation on this basis but gave them the option to drop out without any penalty; 35 of the 41 students chose to stay. Their feedback, both at the individual and team level, provided 35 units of analysis for the case of this specific implementation of the SKY HIGH simulation.

Findings

My primary research question was as follows: What attributes must a simulation game have to be a good device for teaching the concepts and competencies required to manage the growth phase of an entrepreneurial venture?

The methodology I used to analyze the student reports was that of grounded theory as first proposed by Glaser and Strauss (1967) and subsequently enhanced by Strauss and Corbin (1990).

Case research methodologists (Yin, 1989) and Eisenhardt (1989) have stressed the importance of extreme examples to the validity of generalizations extrapolated from case research. "Crash Landing at INSEAD," as I have affectionately labeled this study, was an extreme example in almost all of its dimensions, including

- the appropriateness of environment,
- the experience and capacity of the key actors (the students/game players) as critics of the experience under investigation,
- the first-time status of the course instructor as a game administrator, and
- the conspicuous failure of the game (and the consequent clarity of issues this result was capable of demonstrating).

The grounded theory that emerged from this case research consisted of four categories and several associated properties that are summarized in Table 1. The table requires little elaboration. My proposition is that for a simulation game to be a successful tool of entrepreneurial education, it must possess and deliver the four fundamental attributes (and associated properties) that are now discussed.

Adequate suspension of disbelief

A successful simulation must be capable of creating among its students/players an adequate or acceptable suspension of disbelief. When well-educated people watch cartoons on television, they are perfectly happy to accept scenarios that completely defy the laws of physics. Purely for entertainment's sake, they are willing to suspend disbelief to a level well beyond that which they would tolerate as theater patrons attending a drama staged in the West End or Broadway. The SKY HIGH simulation was equivalent to a child's cartoon for an audience requiring a Broadway play.

TABLE 1: Critical Factors for Successful Use of Simulation Games in Teaching Entrepreneurship

Category	*Properties*
Adequate suspension of disbelief	A credible, relevant, illustrative scenario
	An appropriate or acceptable sophistication level
	A focused, executive time frame.
Unambiguous communication of	The rationale for the teaching mode
	The learning objectives and course relevance
	The game's rules and operations
	Program-provided, in-play feedback
	Human-provided, in-play feedback
	The game's limitations
	Commitment levels expected of players
	Assessment criteria and grading method
	The distinctions between game feedback and grading
Technical reliability of	Software
	Hardware
	"Humanware"—the game controller
	Documentation
Cost-benefit assessment	A comprehensive evaluation embracing all properties of the previous three categories

I suggest that a useful test of any game's disbelief-suspension adequacy would be the question, "Can I be confident that the players will play the game with enthusiasm, accepting its limitations and operating happily within them?" The three properties illustrated in Table 1 constitute necessary conditions for this to be achieved.

Unambiguous communication

Every aspect of game implementation must be characterized by unambiguous communication. It was a general complaint in student assessments that the game lacked credibility. It had failed to persuade them to suspend disbelief. Deeper probing revealed that suspension of disbelief was a function of ability to create and fulfil expectations. Ambiguous communication destroys that ability.

Technical reliability

Every aspect of game componentry and implementation procedure (software, hardware, documentation, and the skills, experience, and competence of the administrator) must be characterized by technical reliability. Poor documentation, in particular, has the ability to undermine the requirement for unambiguous communication.

Cost-benefit analysis

In the context of specific learning objectives and constraints, an accurate, multi-item, cost-benefit analysis must form the explicit justification for choosing a

simulation game instead of alternative teaching methods. This includes not just financial cost but, for example, the investment in time and effort needed to get students to a standard of sophistication enabling them to benefit from playing a given game. Each educator must create his or her own list of assessment variables, according to circumstances.

Invitation to debate

The motivation for this research was my belief that evaluation of the pedagogic efficacy of simulation games requires, as a predicate, the development of a theory to guide systematic investigation. The four categories and associated properties developed above provide such a theoretical framework—for systematic and comparative assessment of simulations as tools of entrepreneurship education in particular and, perhaps, education in general.

The theory above is a starting point for several avenues of departure:

- as a basis for questionnaires for students to evaluate simulation games after playing them (it has since been used for that purpose at INSEAD);
- as a checklist for educators to decide whether to use a simulation game and to help them select an appropriate one; and
- as a starting point for further research aimed at an ISO quality standard for educational simulation games, beginning perhaps with a generic "package labeling regime" that describes the aims, characteristics, and limitations of a given game.

I believe that the grounded theory summarized in Table 1 above, as it stands, would have provided me, as a novice in the use of simulation games, with valuable guidance on how to select a suitable game. Armed with this checklist, I would probably have rejected SKY HIGH as a suitable teaching tool in the context of the course I was teaching. Entrepreneurs always seek to minimize risk; thus, it is appropriate that teachers of entrepreneurship, though being prepared to pioneer new techniques (invest in new ventures), minimize the downside by applying appropriate screening criteria.

Do others agree? Does the theory have application beyond providing a checklist for game users? Could it assist game developers? Could it be used as the basis for a quality standard against which simulation games with an educational purpose could be assessed?

It is my hope that this brief article will generate discussion among colleagues from the simulation game pedagogical community. I look forward to their feedback.

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