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## **INTRODUCTION**

### **Business Simulations: The Next Step in Management Training**

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It is said that Japanese entrepreneurs live and work according to an almost mythic tome, *A Book of Five Rings*, written in 1645 by the great samurai Miyamoto Musashi. Although he was considered virtually invincible, Musashi did not feel he had mastered strategy. At the age of thirty he decided to redirect his life and devote himself to a search for the principles of strategy. Near the end of his life, Musashi retired to a cave to write. He intended his book as a treatise that would apply not only to battle strategy, but also to "any situation where plans and tactics are used."

Several of Musashi's principles on strategy have powerful applications in today's business world. To paraphrase Musashi, the mastery of strategy requires that one fulfill the following six directives: be honest; be familiar with every skill and profession of business management; know the difference between profitable and unprofitable activities; attend to detail; identify and work on only those activities that will have value in the future; and train continuously in order to develop an intuitive judgment and understanding of business situations and an ability to perceive things that others cannot see. Mastery of these elements, Musashi believed, occurs only through constant training and tireless practice.

Peter Senge makes a similar observation regarding the importance of training in his book *The Fifth Discipline: The Art and Practice of the Learning Organization*.<sup>1</sup> Senge states that training, not study alone, is what changes a person. Through purposeful training, an individual can learn to act and think in expanded ways and can thus be transformed into a new competitive force.

There are many methods of management training. Textbooks, lectures, and case studies represent forms of solitary training. Virtual business simulations are a form of combative training in which students pit their business skills against those of formidable opponents under the watchful eye of a training coach. This article advocates the inclusion of large-scale, virtual-reality simulations in the training of future managers. Reality simulations have unique training capabilities that foster personal transformation in the manner advocated by Senge. Moreover, they can help students develop an almost intuitive understanding of business, including a seamless perspective of its functional elements and knowledge of how these elements can be coordinated to achieve a strong and profitable position in the market. Another distinctive feature of simulations is their emphasis on management—of the firm, of its strategy, and of its resources.

The position taken in this article reflects my personal experiences as a developer and provider of business simulations in the classroom with MBA students, executives, undergraduates, and even high school students. The points made here also draw heavily on the experiences of a host of educators who have used a variety of business simulations, in a variety of learning contexts.<sup>2</sup>

## **BRIDGING GAPS IN BUSINESS SCHOOL EDUCATION**

Are business schools doing their jobs? A critique by Behrman and Levin in the *Harvard Business Review* more than a decade ago suggested that the answer at that time was no.<sup>3</sup> According to the authors, critics were asserting that business schools place too much emphasis on quantitative analysis, tools, and models and too little emphasis on qualitative thinking, complex trade-offs, and creativity; too much on theory and not enough on execution; too much on short-term performance and not enough on long-term success; too much on career and corporate goals and too little on interpersonal relationships and social ethics; and too much on separate disciplines at the expense of integrative problem-solving and management.

Part of the criticism of business education over the years has stemmed from our primary methods of teaching—lecture/textbook and case study. Figure 1 (pages 4 and 5) details the characteristics, advantages, and disadvantages of these methods and of reality simulations.<sup>4</sup>

The lecture/textbook format is very efficient for communicating a large number of concepts to a large number of students. However, this format does not do enough to encourage creativity, the integrating of functional material, problem solving, decision-making, risk taking, or interpersonal skills.

Case analysis is a major step in the transition from the academic world to the business world. Students have the opportunity to analyze and solve complex problems, think in strategic ways, and integrate material across disciplines. The limitation is that students do not have to execute their decisions and live with the consequences. They are also not required to respond to competitive moves and countermoves, or to deal with the decisions of others.

Simulations can go farther than traditional methods in bridging the gap between the classroom and the world of real-life business decision making. Simulations are self-contained. Further, the more sophisticated games offer a broad scope and provide students with substantial authority and responsibility. As with case analyses, with simulations students are required to analyze and solve complex problems, think in strategic ways, and integrate material across disciplines. In addition, they must act on their decisions and deal with the consequences; this includes adjusting strategies in response to changes in end-user needs or wants and to competitive moves or countermoves.

Business simulations have only lately begun to reach their full potential. Until recently, hardware constraints, software-design requirements, and student workload considerations limited the depth and breadth of decision making that could be modeled. New developments in microcomputers and business software have greatly expanded the possibilities. Almost all of the published simulations are being upgraded as a result of advances in computer software and hardware and increased acceptance of simulations by educators. Currently, there are a limited number of large-scale simulations.<sup>5</sup>

## **THE SIMULATION METHOD OF ACTIVE LEARNING**

A simulation is an experiential learning exercise in which students practice the design, implementation, and control of business strategies. They worry about the applications, not the definitions, of business concepts, principles, and methods. Decisions do not occur sequentially but simultaneously and interactively, just as they do in the business world. The paramount objective is to help students internalize business thought through the practice of business decision making.

The more sophisticated business simulations, which may be labeled reality simulations, are designed to capture the qualitative and quantitative dimensions of business decision making within the context of a total business enterprise. Students essentially run a business for eight to sixteen decision periods, depending upon course design. The problems and opportunities encountered require total immersion into the business enterprise.

In these simulations, students have the opportunity to work either as top managers or as entrepreneurs. They must survey the market, identify and evaluate market opportunities, design and execute a business program, monitor their own performance and that of the competition, and adjust their strategy and tactics as necessary. Decision making, which occurs at the tactical level, includes such business activities as brand design, research and development, capacity planning, production scheduling, inventory control, media planning, and sales-office management. Since all decisions are constrained by limited financial resources, the ability to manage the sources as well as the uses of cash is critical to success.

While the business is small enough that everyone involved can see and experience each aspect of the enterprise, the exercise is usually so complex that teamwork is required. Importantly, the active learning process is nourished by team interaction. Of particular value are the frequent discussions and debates that arise because of the complexity, interconnectedness, and novelty of the decision making. High-level thought processes are required to

understand, inform, and persuade one's colleagues concerning a continuous stream of issues. These conditions help students to enhance their critical thinking skills and develop business language.

### **Creation of Virtual Business Reality**

The simulation develops a living case in which participants create their own virtual business reality. The decision context is provided in the simulation software and manuals. The players provide the living details through their own deliberations, actions, and interactions with competitors and with the market.

Although the industry context does not change, the exercise actually represents a series of interconnected cases. In a sense, every decision period represents a new case and set of circumstances. It might begin as a team-building exercise that shifts to a market-opportunity analysis case, then moves into a test-marketing case, and finally becomes a market-development case. At a later point, the need to finance research and development as well as market expansion might shift attention to the raising of equity capital from outside investors. The need to develop an extended business plan and pro forma cash flows will pull together many related decisions.

As the industry and the firm mature, price and reliability become more important. At this point, the team's attention might shift to the improvement of factory operations via the use of common components, greater emphasis on product quality, reductions in line-changeover times, and the use of different techniques for production scheduling. And, of course, there is always the need to fend off aggressive competitors.

External market analysis further shapes the issues being addressed as team members try to understand how the market is altered by competitive moves, while at the same time assessing the impact of their own firm. Internal debates rage over an additional feature, a lower price, another salesperson, or a new media outlet and the effects of these on consumer preference, competitive advantage, cash-flow requirements, and profitability.

As case studies, simulations are much richer than the decision outline found in any template or manual. It is the imaginations and thought processes of the students that fill in the details; the computer program becomes simply a tool for organizing the work and recording the team's decisions. Students do not need to role-play, as the situation they are dealing with is, in part, of their own doing. The process of thinking strategically forces students to go beyond the immediate problem to consider their firm's future and how they want to shape it.

### **The Role of the Instructor**

With simulations, the instructor's role departs from the traditional format. Although lectures on strategy, competitive analysis, or cash flow may be warranted, the instructor's major responsibility is to serve the dual role of devil's advocate and coach.

As devil's advocate, the instructor should challenge the team to thoroughly understand the dynamics of the market and the decision-making environment. During regularly scheduled executive briefings, team members should present their analyses of the market, the decisions they have made, and their justifications for those decisions. The instructor's role is not to provide solutions to the team's problems, but rather to raise questions and issues that have not yet been addressed.

As coach, the instructor's role is to help students develop critical thinking skills. At the very least, the questions instructors ask during executive briefings should stimulate students to consider additional dimensions in their strategic thinking. Also, students come into meetings with the faculty with pointed questions based upon a need to know, much like their executive counterparts. The current situation can thus be used to illustrate concepts, principles, and theories concerning innumerable topics.

The instructional assistance comes at a highly relevant time and within a context that is germane for and unique to each student. From a pedagogical point of view, this approach is highly effective. The students' involvement in a business makes them highly receptive to ideas, techniques, and thought processes that might help them to resolve difficulties or better shape their firm's future. The approach is also very efficient: techniques that are clearly understood do not require elaboration by the professor.

## **MANAGERIAL SKILLS PRACTICED IN SIMULATIONS**

A simulation exercise serves as a reasonably intact organization in which disciplinary content is reinforced and the linkages among disciplines are obvious. In addition, the more sophisticated simulations offer students the opportunity to practice a number of important skills, including strategic planning and thinking; management strategy; leadership, teamwork, and interpersonal skills; budgeting and cash-flow management; and understanding and delivering of customer value.

### **Strategic Planning and Thinking**

Strategic planning, which gives purpose and direction to the firm's future actions, requires the setting of objectives and the development of a detailed plan of activities that are interconnected, time phased, and financially sustainable. Strategy emerges with the understanding of market opportunities and corporate capabilities. Preoccupation with short-term goals may cause long-term problems.

In some sense, strategic planning is a mechanical task of organizing activities over time. While strategic planning is necessary, it is not sufficient for success. The more critical component, strategic thinking, requires an understanding of tactical options and of how one can skillfully select and coordinate these in order to achieve a desired objective. Further, strategic thinking requires the ability to project into the future both the possible ramifications of a particular tactical maneuver and its potential interactions with present and possible future tactics.

The skills of strategic planning and thinking are not easy to develop; a great deal of practice, feedback, and coaching is needed. An advantage of simulations is that they provide a variety of interconnected business situations in which participants repetitively analyze circumstances, establish objectives, and lay out plans of coordinated activities that extend several planning periods into the future. Unlike the situation with a case study, with a simulation the planning does not end with a formal, long-term strategic plan. Rather, the plan must vie for prominence in an evolving, competitive environment. Consequently, with each day students encounter a new set of circumstances that calls for a reevaluation of yesterday's plan.

**Table 1. Comparison of Lecture/Textbook, Case Study, and Simulation Methods**

	<b>Lectures/Textbook</b>	<b>Case Studies</b>	<b>Reality Simulations</b>
<b>Emphasis</b>	language tools of business	situation analysis problem diagnosis problem solving strategic thinking	business process execution of strategy/solutions management of tactics team work
<b>Content</b>	concepts principles theory analytical tools	decision situations <ul style="list-style-type: none"> <li>• diverse scenarios and contexts</li> <li>• complex problems</li> </ul>	business processes interdependent decisions time phased implementation continual adjustment
<b>Method of learning</b>	knowledge acquisition sequential presentation of information cognitively passive <ul style="list-style-type: none"> <li>• listening</li> <li>• reading</li> <li>• memorization</li> </ul> highly structured classroom <ul style="list-style-type: none"> <li>• low ambiguity</li> </ul> right and wrong determined by definition	critical thinking sequential analysis of typical/important decisions cognitively active <ul style="list-style-type: none"> <li>• analysis</li> <li>• debate</li> </ul> semi-structured classroom circumscribed problems & opportunities <ul style="list-style-type: none"> <li>• high ambiguity</li> </ul> right and wrong determined by logic	decision making & management simultaneous treatment of interdependent decisions cognitively and emotionally active <ul style="list-style-type: none"> <li>• must take calculated risks</li> <li>• responsibility for decisions</li> </ul> unstructured classroom <ul style="list-style-type: none"> <li>• undefined, unanticipated problems and opportunities</li> <li>• complexity makes it difficult to perceive cause and effect</li> <li>• very high ambiguity</li> </ul> right and wrong determined by outcome; vary with business conditions <ul style="list-style-type: none"> <li>• financial performance</li> <li>• market performance</li> <li>• no ambiguity in performance measurement</li> </ul>

	Lectures/Textbook	Case Studies	Reality Simulations
<b>Advantages</b>	<p>efficient</p> <ul style="list-style-type: none"> <li>• large number of ideas</li> <li>• large number of students</li> <li>• minimum prep for faculty</li> </ul> <p>standardized across faculty</p> <ul style="list-style-type: none"> <li>• common text</li> </ul> <p>text-based lectures</p> <ul style="list-style-type: none"> <li>• multiple-choice exams</li> </ul> <p>work pace-set by tests</p> <ul style="list-style-type: none"> <li>• study can be delayed</li> </ul>	<p>closer to real life</p> <ul style="list-style-type: none"> <li>• actual decision situations</li> <li>• sorting out information</li> <li>• problem identification</li> <li>• problem solving</li> <li>• cross-functional issues</li> </ul> <p>interpersonal relations (group cases)</p> <ul style="list-style-type: none"> <li>• leadership</li> </ul> <p>organization</p> <ul style="list-style-type: none"> <li>• analysis</li> <li>• esprit de corp</li> <li>• team work</li> <li>• division of task responsibility</li> <li>• need for cooperation</li> </ul> <p>exposure to diversity of</p> <ul style="list-style-type: none"> <li>• decision contexts</li> <li>• industries</li> </ul> <p>work pace set by assignments</p> <ul style="list-style-type: none"> <li>• regular progression of cases</li> <li>• steady, frequent workload</li> </ul> <p>opportunity for mini-tutorials</p> <ul style="list-style-type: none"> <li>• case studies illustrate key decisions, relevant issues and tradeoffs</li> </ul> <p>intellectually challenging</p> <p>builds confidence due to practice</p> <ul style="list-style-type: none"> <li>• in communication &amp; persuasion</li> <li>• problems solving</li> <li>• logical thinking</li> </ul>	<p>closest to real-life manager's role</p> <ul style="list-style-type: none"> <li>• focus on execution</li> <li>• authority &amp; responsibility to act</li> <li>• work with budgets and cash flows</li> <li>• continuous skillful adjustment necessary</li> </ul> <p>interpersonal relations</p> <ul style="list-style-type: none"> <li>• leadership</li> <li>• vision</li> <li>• initiative</li> <li>• coordination over time</li> </ul> <ul style="list-style-type: none"> <li>• team work</li> <li>• division of functional responsibility</li> <li>• functional accountability</li> <li>• extended interdependence (10-15 weeks)</li> <li>• work out bad decisions</li> <li>• resolve points of tension</li> </ul> <ul style="list-style-type: none"> <li>• deal with decision nuances due to</li> <li>• overlapping decisions</li> <li>• time-phased implementation</li> <li>• cash-flow constraints</li> </ul> <p>work pace set by decision deadlines</p> <ul style="list-style-type: none"> <li>• current decisions demand attention</li> <li>• decisions affecting future can be delayed</li> </ul> <p>opportunity for mini-tutorials</p> <ul style="list-style-type: none"> <li>• familiar with decision context</li> <li>• receptive due to involvement</li> <li>• understanding enriched by personal relevance</li> </ul> <p>captivating</p> <ul style="list-style-type: none"> <li>• personal stake</li> <li>• competitive spirit</li> </ul> <p>students assume the role as simulation becomes reality</p> <p>living in microcosm helps students to see interconnectedness of</p> <ul style="list-style-type: none"> <li>• business decisions</li> <li>• builds confidence due to practice in                             <ul style="list-style-type: none"> <li>• decision making</li> <li>• risk taking</li> <li>• management of operation</li> </ul> </li> </ul>

	Lectures/Textbook	Case Studies	Reality Simulations
<b>Disadvantages</b>	limited development of <ul style="list-style-type: none"> <li>• knowledge integration</li> <li>• strategic/critical thinking</li> <li>• creativity</li> <li>• interpersonal relations</li> <li>• problem solving</li> <li>• risk taking</li> <li>• decision making</li> <li>• management skills</li> </ul> repetitive for faculty	staff or consultant type training <ul style="list-style-type: none"> <li>• focus on problem identification</li> <li>• no responsibility for execution</li> <li>• no management of team members</li> <li>• no risk taking required</li> </ul> can reinforce functional silo thinking more quantitative, less qualitative individual case preparation leads to <ul style="list-style-type: none"> <li>• competitive and not cooperative behavior</li> </ul> anxiety producing for students <ul style="list-style-type: none"> <li>• unstructured problems attention to detail</li> <li>• no right answer</li> <li>• skills and knowledge exposed in class</li> <li>• thinking always challenged</li> </ul> success (grade) measured by <ul style="list-style-type: none"> <li>• analysis of detail</li> <li>• logic</li> <li>• communication skills</li> </ul> preparation is hard work challenging for faculty <ul style="list-style-type: none"> <li>• extensive preparation</li> <li>• less structure in classroom</li> <li>• must think on feet</li> <li>• must offer credible analysis</li> </ul>	limited variety of experiences <ul style="list-style-type: none"> <li>• single industry scenario</li> <li>• confined set of tactical &amp; strategic decisions</li> </ul> development of large scale simulations very expensive length of exercise limits practical number of simulation experiences anxiety producing for students <ul style="list-style-type: none"> <li>• immediate, total immersion</li> <li>• everything needs attention</li> <li>• clues to problems not well structured</li> <li>• must take initiative</li> <li>• must live with mistakes</li> <li>• success (grade) measured by outcome, dependent upon                             <ul style="list-style-type: none"> <li>• team members</li> <li>• competition</li> </ul> </li> <li>• information not yet available</li> <li>• changes with changing conditions</li> </ul> time intensive; always more to do challenging for faculty lengthy learning process difficult to stay in touch <ul style="list-style-type: none"> <li>• complexity of game</li> <li>• dynamic environment</li> </ul> need to manage student discomfort other faculty not supportive <ul style="list-style-type: none"> <li>• not familiar with method or value</li> <li>• unstructured activity</li> <li>• limited classroom work</li> <li>• reduced student contact</li> <li>• simulation competes with other classes for students'                             <ul style="list-style-type: none"> <li>• attention and time</li> </ul> </li> </ul> time consuming—competes with research, publishing

### Strategy Management

To borrow from Thomas Edison, we might say that the management of strategy involves 1 percent inspiration and 99 percent perspiration. Strategy management requires on your-feet thinkers who are skillful adjusters. Part of management education's task is to enhance the decision-making skills of future managers, who are likely to be called on to dynamically adjust strategies as new information comes to light and unexpected events unfold.

To succeed, the manager of a strategy must be focused, flexible, and fast, as well as capable of recognizing fundamental shifts in business conditions. It is also essential that the manager explore new possibilities by developing and testing ideas in both the company and the market, and that he or she be ready and able to reallocate resources when conditions require the firm to move in new directions.

The "correctness" of a decision will depend upon the circumstances at the particular point in time. With each success or failure, the manager and the competition create new conditions, which often require still new strategies and tactics.

A simulation experience is unique in its ability to provide training in strategy management; no other learning tool can give students experience in the execution and constant adjustment of a strategy. Further, simulations allow students to personally observe the interconnectedness of business functions. With firms everywhere downsizing or eliminating their strategic business units, the manager of a strategy cannot count on functional specialists to fill in

the knowledge gaps between functional areas. He or she must have a solid cross-functional understanding of the business enterprise.

Simulations forcefully illustrate the management challenges facing organizations, and they provide a more holistic and deeper understanding of strategy implementation than is possible using traditional teaching methods alone.

### **Leadership, Teamwork, and Interpersonal Skills**

In a business simulation, a group of individuals is brought together to form a team. The manager of the strategy is also the manager of the team. He or she must assess the team's skills, organize the work, manage the work in process, and reorganize as needed. This individual must be a leader with team-building and interpersonal skills. It is his or her job to help the team become more cohesive, to create a sense of mutual commitment and trust, to nurture the talents and capabilities of team members, and to help participants develop team skills. Managing a team is far more difficult than managing materials, an advertising campaign, or some other mechanical activity. It is very important for the team manager to regularly assess and improve his or her role and effectiveness.

In large, complex simulations, teamwork is essential for success. There is simply too much information to process and too many decisions to make for any one or two individuals to do it all. Each member of the team must determine how he or she can actively contribute, and each must depend upon the others to do their jobs.

A simulation experience is a more complete teambuilding experience than cases and other group projects because the team must live with its decisions. When a poor decision by an individual or by the team makes adjustment necessary, long-term stress is added to the team-dynamics equation. Team members do not forget whose ideas were accepted and whose were not. They also remember whose ideas helped the organization, as well as whose held it back or even damaged its potential.

A number of people on the team will have good ideas, but only a limited number of those ideas can be accepted and implemented. Students must fight for their ideas, and at the same time they must listen and respond to the ideas of their colleagues. All team members must develop communication skills and learn the arts of negotiation and confrontation, which are necessary parts of the decision making process.

The team experience can provide all participants with an understanding of the role of leadership within a micro setting, and it can illustrate how work gets done in the face of financial and time constraints and the presence of multiple viewpoints. Members also see firsthand how personal factors can color rational decision-making.

A particularly attractive feature of simulations is that participants can pause at strategic points from the routine of business and focus on interpersonal skills and team dynamics. The case studies are the experiences of the team and of its individual members. Team facilitators can step into these situations and manage the process of self-diagnosis and adjustment. Working like personal trainers or coaches, they can offer students specific suggestions on how to work with others to accomplish organizational and personal goals. At the end of the exercise, facilitators can lead the team through a final review of its progress and process, and encourage team members to develop personal plans of action for contributing to and managing future teams.

### **Budgeting and Cash-Flow Management**

The management of resources usually translates into the management of money. Strategic planning and execution require strong skills in budgeting and cash flow management. All participants must anticipate the timing of disbursements and receipts relative to the execution of the plan. During the planning phase, there are often adjustments to both the plan and the budget as the team integrates tactics with cash-flow requirements. During the execution phase, the adjustments become even more critical as resources are reallocated in response to evolving and unexpected events and information.

Cash-flow management is perhaps the most difficult technical skill to master. The manager of the strategy must understand the differences between cash-flow management and profit management, and he or she must realize the constraints of financing growth from sales revenue.

One of the advantages of a simulation is that all decisions are tied in to the income statement, balance sheet, and cash flow statement. Students can immediately see how their decisions impact the firm's various accounts and its profitability. By living with their own company, team members develop an almost intuitive understanding of financial statements and cash flows. They learn to carefully manage receipts and disbursements and to project their cash flow requirements several quarters into the future.

A simulation also helps students to understand financial accountability. The exercise can be structured so that the team presents its business plan and funding needs to outside investors. Because investors want to maximize the returns on their investments, they demand high performance from a venture firm. Every managerial student must come to grips with the harsh reality that the bottom line is the ultimate driving force behind any business enterprise.

### **Understanding and Delivery of Customer Value**

To deliver customer value, the manager must first know what customers want and need. Because many customers have difficulty articulating exactly what this is, it is the manager's task to sort out all the data and to infer customer wants and needs.

To accomplish delivery of customer value, managers must understand how a particular component or service translates into a benefit for the customer. They must then determine how to combine components and services to achieve the value desired, and with a profit. Management students must understand that even when firms are able to find and deliver the right assortment of features and services, the work is still not over. Good products are imitated, and customer expectations shift upward. Like it or not, the manager will be caught in an upward spiral of innovation and imitation.

The understanding and delivery of customer value is a very difficult aspect of management to master; again, a great deal of practice is required. In a simulation, the learning process parallels the experience in business—that is, clues are introduced intermittently and without explicit directions for how to capitalize on them. Students must listen to what customers say and watch how they react, infer priorities and preferences, and engage in trial-and-error decision making. Under the watchful eye of the instructor, this evolving experience will help students become proficient in understanding the market and responding to and anticipating market needs.

### **Other Skills Developed through Simulations**

Simulations can help students enhance a number of skills beyond those described above. In preparing and presenting business plans, students enhance their skills in oral and written communication, as well as in time management.

In addition, by the time students complete a comprehensive simulation, the decision process of analysis, planning, execution, and control should have become very natural for them. Many students adopt the decision process naturally; most discover it out of necessity.

Students can also learn a great deal about themselves through a simulation exercise. Can they succeed, and possibly thrive, within a highly unstructured venture environment? Can they deal with the ambiguity that is inherent in any new venture? Are they able to take calculated risks when there is very limited information available? As they gain experience and an understanding of what it takes to succeed in an ever-changing business environment, students will usually find that their ability to make good decisions is enhanced. In turn, this realization enhances self-confidence.

### **ISSUES FOR STUDENTS**

At first, many students are uncomfortable with business simulations. This discomfort comes in many forms and may be different for different students. Management faculty who are regular users of simulations report the following general reasons for students' initial unease:

- The learning format is highly demanding, with students needing to learn a vast amount in the first week alone.
- Students must take more initiative in structuring the learning process than is the case with other pedagogues.

- The old formula for getting good grades is not effective; the dynamic application of knowledge is totally different from the acquisition of information.
- An individual student cannot completely control his or her own destiny. The decisions and actions of other team members and of the competition interfere.
- There are few right or wrong answers; rather, the answers change as the market changes.
- A decision cannot be judged good or bad until the outcome is known. Simulations are very time consuming, and there is always more work that could be done to gain the competitive advantage.
- Some students do not like to be graded on market or financial performance, as these are moving targets. Such students prefer to be evaluated strictly on their skills in analysis, writing, and oral presentation, as well as on the amount of effort they put into the simulation exercise.
- The instructor cannot tell the students what to do, even though the students do not know what to do.

Most of these sources of discomfort actually derive from the strengths of simulations. Once students are past their initial discomfort, most find that they do like simulation exercises. Faculty who conduct simulations report that students frequently describe the experience as challenging, motivating, and fun. Students say, too, that simulation exercises give them a sense of ownership.

### **ISSUES FOR THE INSTRUCTOR**

In most cases, instructors face a learning curve in using simulations. With large-scale simulations, an instructor may need a semester or two before he or she feels completely comfortable with the use of this device as a learning tool. There is also a need for the instructor to stay in touch with the events of the simulation exercise. This is of particular importance with complex, large-scale simulations, where an instructor who does not stay in constant touch will quickly be left out of the action.

The fact that some students do not like simulations is also a very real issue. A small number of vocal students can make it uncomfortable for an instructor, especially during the first run or two of the exercise. Also, these negative opinions can pull down teaching evaluations. Without administrative support, junior faculty members must carefully assess the use of simulations, despite the tremendous learning potential of such exercises.

Simulation users find that other faculty may not share their enthusiasm for this pedagogical method. Where a simulation is the dominant element of the course, the instructor may spend less than half the normal time in the classroom. Most of the instructor's contact with students occurs during weekly or biweekly executive briefings. The students set their own schedule and run the simulated firm as they would their own company. Other faculty members may feel that this setup provides too much freedom and too little structure.

Finally, the mechanics of the simulation can add several hours to the instructor's workload each week. Also, if the simulation is used with a large number of students, the instructor might need a dedicated computer and a graduate student (game administrator) to help with the processing of team decisions.

### **THE FUTURE OF MANAGEMENT EDUCATION**

No single pedagogy can fulfill all the needs of management students. Simulation exercises represent one advance in our methods of management training. In light of all that is possible with new computer technologies, we have barely scratched the surface. Innovative technological tools can be used to refine and advance management education, giving us greater freedom to help students visualize, experience, comprehend, and retain what we want them to learn. There is almost nothing we cannot simulate or present in close to living detail.

Maximum business preparedness will be achieved through a combination of traditional methods with such new methods as the reality simulation. New learning methodologies can build upon, reinforce, and fill in the gaps of current ones. The challenge is to evaluate and adapt new technologies to our current and evolving needs, and in so doing to move management education forward into the next century.

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## **NOTES**

1. Peter M. Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization* (New York: Bantam, Doubleday, and Dale, 1990).

2. For this article, fifteen faculty were interviewed regarding their opinions of the value of simulations. These faculty have used an assortment of simulations over the years, including the following:

Ernest R. Cadotte, *The Market Place* (Homewood, Ill: Richard D. Irwin, Inc., 1990).

Ernest R. Cadotte, *The Market Place: Executive Edition* (Knoxville, Tenn.: University of Tennessee, 1994).

Jean-Claude Larreche and Hubert Gatignon, *Mark Strat 2* (Redwood City, Calif.: Scientific Press, 1990).

Charlotte H. Mason and William D. Perreault, *The Marketing Game!* (Homewood, Ill: Richard D. Irwin, Inc., 1987).

Anthony J. Faria, Ray O. Nelson, and Dean Roussos, *Compete* (Homewood, Ill: Richard D. Irwin, Inc., 1991).

Hans B. Thorelli, *International Operations Simulation/INTOP* (New York: Free Press/Macmillan, 1963). The updated edition of this simulation is *International Operations Simulation/Mark 2000 (Intopia)* (Englewood Cliffs, N.J.: Prentice Hall, 1994).

3. Jack N. Behrman and Richard I. Levin, "Are Business Schools Doing Their Job?" *Harvard Business Review* 62 (1) (Jan.-Feb. 1984): 14~147.

4. For an excellent discussion of the advantages of the case method, see Thomas V. Bonoma, "Learning with Cases" Boston: Harvard Business School, 1989.

5. See Frank Alpert, "Large-Scale Simulation in Marketing Education:" *Journal of Marketing Education* (1933): 30-35, and Alvin C. Burns and James W. Gentry, "Simulations in Marketing: Past, Present, and Future:" *Marketing Education Review* (1992): 3-13.