Teaching Points:

Examination of a Discontinuous Innovation Adoption in an MBA Marketing Curriculum: A Partnership Perspective

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Executive Summary

A *discontinuous innovation* alters the social behavior of the adopters. In business and marketing education, such an innovation transforms the behavior of both faculty and students. This article examines the adoption of a discontinuous innovation, a purely experiential marketing course, in an MBA curriculum.

Our teaching innovation went through a three-stage adoption process, including initiation, integration, and diffusion. Currently, this experiential course, which is based on a simulation game, is taught as a core course in several master level programs in the business college, including an Executive MBA, a Global Executive MBA, an International MBA (IMBA), a Master of International Business (MIB), an overseas MIB, an overseas IMBA, and an overseas Executive MBA.

Our successful adoption of the discontinuous innovation can be attributed primarily to innovation partnerships and collaborative activities. We forged a close partnership with Innovative Learning Solutions Inc., a software developer, so that we could jointly devise a simulation game named *Marketplace.* We participated in its development in various capacities. Our partnering activities were focused on game development and testing, two successive stages of product innovation. Our participation in these activities was instrumental to the adoption of *Marketplace* in our programs.

The new teaching approach we adopted over the last decade addresses several limitations of the lecture-based method, and also provides a number of other benefits. We conducted an empirical study to examine whether students perceived these advantages. On the overall dimensions, the simulation course was seen as a better vehicle in helping students make career preparations, achieve educational goals, and utilize time. It was also advantageous in providing a high level of involvement and satisfaction.

Introduction

A discontinuous innovation alters the social behavior of the adopter (Christensen 1997). In business and marketing education, such an innovation transforms the behavior of both faculty and students. "The professor's role evolves from that of a knowledge fact provider to a knowledge theorist and manager" and the student changes from a passive knowledge acquirer to an active learner (Celsi and

Wolfinbarger 2002, p. 69).

However, many technologies adopted in business colleges today are characterized as incremental or continuous innovations, in nature replacing old media to support the lecture-centered learning mode (Backhaus and Liff 2007). For example, PowerPoint and Corel Presentation, advancements from transparencies, are mostly used for content transfer, *i.e.,* demonstrations of textbook materials. An electronic syllabus on the Internet is a virtual mirror of the paper brochure and handout in the classroom. Most Web-based classes, though more flexible because of their synchronous and asynchronous deliveries, are an extension of physical classrooms. While these innovations facilitate teaching, they do not fundamentally alter the cognitively passive learning style in lecture-based classes.

In the virtual business world, students establish their own companies, assume the role of executives, and make strategic decisions in new product development, customer and competitor analysis, market entry, advertising and sales management.

The objective of this article is to introduce the adoption of a discontinuous innovation, a purely experiential marketing strategy course, in an MBA curriculum. To achieve this goal, we first describe the simulation game selected as the experiential device, our innovative pedagogy, and a three-stage adoption process we went through. Then, based on a partnership perspective, we examine the contributing factors in the adoption process. In the next section, we present an empirical study to evaluate the effectiveness of the new pedagogy. The information in this study is based on more than a decade of successful experience of the faculty in the department of marketing at a large southeastern public university.

Teaching Innovation Adoption

Discontinuous Innovation

The discontinuous innovative technology we have adopted is Marketplace, a computer network-based program provided by Innovative Learning Solutions, Inc. (ILS). The program allows a class to simulate the inception of a global industry and its development through growth to early maturity. In the virtual business world, students establish their own companies, assume the role of executives, and make strategic decisions in new product development, customer and competitor analysis, market entry, advertising and sales management.

In our simulation course, the learning behavior of students is distinctive from that in a lecture-based class in several ways. First, students go through an experiential learning process (Ramocki 2007; Saunders 1997). They take on a prescribed role, interact with other participants in the virtual industry, and process knowledge in a situation characterized by a high level of active involvement. Second, they take part in a recursive decision process (Kunz and Pradhan 1992). In the simulated industry, students in each team make quarterly decisions, and their performance in the quarter is a function of their decisions interacting with those of all other participating teams. At the end of the course, each team's market position (e.g., sales, market share, profits, etc.) is the consequence of the cumulative decisions of all teams over the life of the industry. Third, it is an integrative cognitive process (Shaw, Fisher, and Southey 1999). In this class, knowledge in marketing strategy is learned and applied not in isolation but in conjunction with that in other business functional areas. For example, when students design a new product and its promotion campaigns, they need to simultaneously make and implement supportive decisions in manufacturing, accounting, finance, and distribution.

Adoption Process

The innovation adoption process is a sequence of stages through which a potential adopter passes in the acceptance (or rejection) of a new product, method, or service (Rogers 1995). With respect to organizational adoption, three main stages are identified: initiation, integration, and diffusion (Frambach and Schillewaert 2002).

As part of the initiation, we started teaching the simulation course using the Marketplace game in spring 1990. At that point the game was titled "The Market Place: A Strategic Marketing Simulation." It was tentatively offered to senior undergraduate marketing students as a special experimental class. Several features characterized the initiation. In regard to adoption decision mode, our experience fits the bottom-up approach in which an individual, often known as an innovation champion in one unit of the organization, takes the first step in the adoption process (Frambach and Schillewaert, 2002). One faculty member in the marketing department took the initiatives in making the adoption decision and teaching this new course with a motivation to improve the marketing strategy course. Cognitively, it was a learning period in which the instructor attempted to familiarize himself with the content of Marketplace and identify a match between the course material and its target students. As the instructor recalled: "Although the students were wildly enthusiastic about the class, I found the material rich and sophisticated enough to be graduate, rather than undergraduate matter." Pedagogically, the instructor was focused on developing a participation format to accommodate the early version of Marketplace. He described his efforts as challenging because "In this version of the game, teams were not vertically integrated; rather, half of the teams were manufacturers and the other half were distributors. As a consequence, a large fraction of the course involved negotiations between the groups, with alliances made and dissolved, contracts drawn up, and so forth."

In the Integration stage, the simulation course was accepted into the MBA curriculum in fall 1992. From 1992 to 1996, it became a core course offered to MBA students regularly both in spring and fall semesters, with a second faculty member joining the teaching team. The integration phase was marked by curriculum adaptation in which the instructors developed a full range of class activities to make Marketplace suitable for a semester course. For example, every week students were required to write a quarterly report analyzing sales, market demand, and competition. During the fifth week of the course, students spent the week preparing a business plan, presenting it to venture capitalists, and negotiating for equity investment. From the sixth to seventh week, they focused their attention on forming strategic alliances and negotiating for joint development of new products. These activities both enriched students' participation experience and allowed them to gain skills needed in the real business world.

...Our faculty members devoted a tremendous amount of resources and effort in curriculum development and overcame numerous hurdles in the entire adoption process.

Among the three stages of innovation adoption, diffusion is the last one, and it can be measured by an accumulated level of users. In the field of business education, diffusion refers to the expansion of an innovative teaching technology from a single program to multiple programs. In our case, at the end of 1996, the simulation course was a required core course only in our regular MBA program. From 1997 to 2004, it was adopted as a core course in several more master-level degree programs in the business college, including an Executive MBA, a Global Executive MBA, an International

MBA (IMBA), a Master of International Business (MIB), an overseas MIB, an overseas IMBA, and an overseas Executive MBA. Meanwhile, the number of the faculty teaching the course increased to four.

Innovation Partnerships

Our successful adoption of the discontinuous innovation can be attributed primarily to innovation partnerships and collaborative activities between innovation adopters and technology providers. In the last decade, innovation in classrooms has fostered a wave of partnerships between adopting schools and technology vendors (Black 2002).

In the early years of the decade, partnerships were mostly passive in nature, with technology vendors acting as donors of classroom equipments (*e.g.,* computers, multi-media classrooms, etc.) and schools as recipients (Jessup and Wheeler 2000). As Griffiths observed (1998, p. 15): "the initial models consisted of little more than handouts, gifts given and then left to the recipients to use as they saw fit." In the passive model, the development of innovative technology remains the sole responsibility of technology vendors.

In recent years, information technology has experienced rapid changes and progress. As a result, "the global information revolution, including an integral relationship with and dependence on technology, is propelling organizations to develop new models of partnership" (Griffiths 1998, p. 15). In the new models, recipients often play an active role in the partnerships by participating in the development of new technologies.

In our situation, we forged close partnerships with Innovative Learning Solutions Inc., the provider of Marketplace, and participated, in various capacities, in the development of the simulation game. Our partnering activities are focused on both game product development, and testing, two successive stages of product innovation. Our participation in these activities was instrumental to the successful adoption of Marketplace in our programs.

Product Development

Customers participate in new product development in different modes. In the traditional approach, they are often involved at the end of a development process through traditional marketing methods, such as surveys, product trials, and focus groups. In the last decade, lead user research has become prominent, which provides organizations with a means to find market opportunities by tapping the expertise and experience base of lead users (Luthje and Herstatt 2004). These users generally face new product or service needs ahead of the bulk of the market (von Hippel 1986).

In each testing case, our faculty team faced participants from other universities and organizations around the world. The competition allowed us to go through those experiences that our students would encounter later.

Since the inception of Marketplace we participated in projects organized by ILS that resemble the lead user research method. As part of the innovation process, these projects consist of two dimensions. The vertical dimension involves projects related to the platform shift in programming technology, e.g. from a DOS-based menu-driven program, to a Windows, and then Internet-based product. The horizontal dimension refers to those that are part of a product-line extension program, such as the design and creation of new simulation games. Our efforts were concentrated in the latter. For example, when ILS was designing Global Strategic Management, a new simulation game that included new business functions associated with global market competition, we were

invited to contribute ideas related to these functions, *e.g.,* formulation of international entry strategies, management of distribution channels and foreign currency exchange rates, and selection of host country manufacturing locations. We set up a project team to provide proposals on these subjects and held meetings on our campus with the chief architect of Marketplace to discuss our proposals. Through the expertise of our faculty in international marketing and business, functional modules based on our ideas and concepts were developed, which underlined the structure of the new simulation game. We also funded the cost of reprogramming Marketplace to create the global setting and environment.

In addition to our involvement in developing new games, we were also active in product improvement. While teaching Marketplace, we regularly encountered situations in which both the instructor and students could benefit from certain game modifications. These situations routinely led us to propose suggestions for game improvement in both the content of Marketplace and the operations of the software. For example after its transition to an Internet-based simulation, one of our faculty members teaching in the overseas programs felt a need to integrate the global nature of business transaction and inflation. In a letter to ILS, he commented: "I have used the web version in Bolivia, Jamaica, and our evening MBA program. In all cases, students are keenly aware of what is missing: tariffs, political issues, inflation, etc. are not part of the picture." On another occasion, a faculty member found one of his students developed certain habits that might hinder the operations of the simulation. The student hit the "Modify" (for decision changes) and then closed the browser without first saving or canceling out the modification. This would lock out all other members from decision-making. Based on his findings, ILS modified the system to automatically notice the inactive player, sign him out, and unlock the decisions.

Benefits of Product Development Participation

Our involvement in product development brought about positive results. First, it played an important role in maintaining the competitiveness of Marketplace. The ideas and concepts generated from us and other advanced users helped set new trends in the simulation games market. Systematic integration of these ideas and concepts into Marketplace has enabled ILS to enhance its product innovativeness and acceptance. Since the inception of the lead user program by ILS, Marketplace has not only succeeded in the platform shift from mainframe to Windows and the Internet but also gained wide acceptance among institutional customers. Today, Marketplace is one of the most popular simulations adopted by universities and corporations both in the U.S. and abroad. In contrast, among the dozens of marketing simulation programs, few have survived the technology shift over the last decade (Fritzsche and Burns 2001).

Our participation also instilled us with a higher level of motivation in teaching Marketplace. Our involvement in developing the simulation game transformed our faculty from users of a simulation game to stakeholders of an innovative technology. As our involvement deepened over the years, we developed a strong interest and motive in making Marketplace a long-term success on our campus. Consequently, our faculty members devoted a tremendous amount of resources and effort in curriculum development and overcame numerous hurdles in the entire adoption process.

New Product Testing

Software program testing is a critical component in software product development. Alpha testing is normally conducted in early stages of development. Participants validate features of software designs and identify

major flaws. Beta testing is implemented in later stages, where testers identify defects and address reliability in the software.

Over the last decade, we have been vigorously involved in Marketplace testing during several stages of its major product innovations, first from Lotus 123-based software to a DOS-based menu-driven program, then to a Windows-based program with the "local manager", and finally to an Internet-based product. Our participation is distinctive in several manners. First, the time commitment is longer. In the software industry, the average duration of testing cases ranges from one week to ten days. In our case, we usually spent five to seven weeks in testing each version of the game. Second, the participation mode is different. In the industry, most software testing cases require customers to participate as individuals. In contrast, our participation primarily consisted of group efforts. Our faculty members took part in alpha and beta tests as a team, with each assuming one or multiple executive positions. Third, our involvement was competitive. In each testing case, our faculty team faced participants from other universities and organizations around the world. The competition allowed us to go through those experiences that our students would encounter later.

Benefits of Test Participation

Our participation has implications for our teaching success. It provided us with the ability to roll out new curricula in our teaching environment immediately upon official releases. The key to successful transition from an early version of Marketplace to the next is the ability to develop the new curriculum on time. Because the tests allowed us to have early access to new product functions and features, we were able to build on our test experiences and prepare new curricula in a speedy manner.

Our involvement also helped create stability and reliability of new functions and features in Marketplace. Practice in the educational software industry shows that a major factor in past innovation failures is the poor quality of new products (Faria 2001). When faculty and students struggled with errors and malfunctions of new software products, they often vented their frustrations by rejecting those products. Innovative Learning Solutions has been able to overcome these obstacles by vigorously testing the game in a competitive environment.

As test participants, our faculty gained prior knowledge about the potential impact of Marketplace on teams. As each version of Marketplace represents a higher level of competition and challenge, student teams with poor performance may run into more instances of organizational difficulties, such as team in-fights and squabbles, which can result in dismissal of individual members and team breakup. Our knowledge allowed us to be more alert to team dynamics and effectively manage those instances when they occurred.

The simulation is rated highly for the items that are related to managing businesses, because the lecture-centered class would scarcely include these skills for students to practice.

An Empirical Study

The new teaching approach we have adopted over the last decade addresses several limitations of the lecture-based method and also provides a number of other benefits. We conducted an empirical study to examine whether students perceive these advantages. The benefits of the new approach were evaluated by requesting students to answer a questionnaire that gauged their perceptions. The questionnaire was adapted from Droge and Spreng (1996) and it was designed to tap students' perceptions of the effectiveness of a

new teaching method on (1) career preparation, (2) traditional educational goals, (3) use of time, (4) involvement and satisfaction, and (5) a set of specific skill competencies.

Method

Sample One

The first sample consisted of 435 students at a large southeastern public university. These students were from fifteen master level classes in the college of business. The course was required for all the students. Among the students, 57% were male and 43% were female. The amount of full-time work experience varied. 12.2% had one year of experience or less. 28% had two to four years and 59.8% had five or more years. Each respondent had just completed the simulation course. Respondents were asked to evaluate this course and the traditional lecture-centered method on a variety of dimensions.

Measurement

Following Droge and Spreng (1996), we divided measurement into two categories, the overall measure of evaluation and the measure of specific skills. The overall measure of evaluation required the students to compare directly the simulation course with the traditional lecture-centered method. On a total of ten measures, the respondents were asked "Which method do you think is better overall?" and students were required to evaluate on a 7-point scale with 1 indicating the simulation method, and 7 indicating the lecture-centered method, and 4 indicating that the methods were equal.

The overall measure of evaluation consisted of four sets, which are shown in Exhibit 1: (1) Career preparation, (2) traditional educational goals, (3) use of time, and (4) personal involvement and satisfaction. Each set contained two to four measures.

Results

The findings of two sets of evaluations, overall direct evaluations and evaluations of specific skills, are discussed in the following.

Overall Evaluations

As shown in Exhibit 1, the simulation course was perceived to be most effective in *Personal Involvement and Satisfaction* and in *Career Preparation*. The means of the two items related to *Personal Involvement and Satisfaction* are 1.56 and 2.11, and are the first and the third in the rank positioning. The means of the two items pertaining to *Career Preparation* are 1.75 and 2.24 and are ranked second and fourth. These results are consistent with the literature (Saunders 1997) that identifies career preparation and involvement as two dimensions that benefit, in general, from experiential learning.

Exhibit 1
Sample One: Overall Evaluation
of Simulation Course versus Lecture-Centered Course (n=435)

	mean	std
Career preparation		
In developing career skills.	2.24	(1.52)
In serving as a good surrogate for real world experience.	1.75	(1.21)
Traditional educational goals		
In helping me understand the material.	2.72	(1.74)
In achieving: "I learn a lot."	2.34	(1.45)
In improving my competences in this area.	2.25	(1.37)
In achieving high educational value overall.	2.61	(1.68)
Use of time		
In making good use of class time.	2.59	(1.80)
In achieving benefits to time.	2.44	(1.60)
Personal involvement and satisfaction		
In producing a high level of involvement.	1.56	(1.12)
In achieving overall satisfaction.	2.11	(1.41)

Note: For the questions specifying "Which method do you think is better overall?" a 7-point scale was used, with 1 indicating the simulation method and 7 indicating the lecture-centered method. The results of one sample t-test shows that the means of all of the above items are significantly smaller than 4 (at < 1%).

The measure of specific skills incorporated twelve statements that asked the respondents to evaluate potential benefits of the two methods separately. A 7-point disagree/agree scale was adopted, with 1 indicating disagree, and 7 indicating agree.

Among the measures related to Traditional Educational Goals, the item for *Improving Competences* has a mean score of 2.25 (fifth) and the item pertaining to *Achieving Educational Value* averages at 2.61 (ninth). Both scores are significantly smaller than 4, indicating that students perceived that the simulation course provided better educational values.

The two items evaluating Use of Time are *Good Use of Class Time* and *Benefits to Time Ratio.* The simulation course was relatively demanding in terms of workload. On average, student reported spending 8 to 12 hours per week in making decisions and more energetic students spent 20 hours per week. In view of the time requirement, students' evaluations were encouraging. The item measuring *Benefits to Time Ratio* has a mean score of 2.44, indicating students' positive perception of the benefits in spite of the heavy workload. The item pertaining *Good Use of Class Time* receives a score of 2.59, reflecting students' experience with the new class

format, which included team briefings, venture capital negotiations, and presentations at different stages of the game.

Evaluations of Specific Skills

The results of the 12 specific skills are presented in Exhibit 2. Students evaluated the simulation and lecture-centered methods on each of the 12 skills using a 7 point disagree/agree scale (7=agree). The results of paired samples t-tests show the simulation course is significantly different (at 0.01) from the lectured-centered method for 10 of the 12 skills. The two exceptions are *Learning Principles and Concepts and Written Communication.* For *Learning Principles,* the two methods receive a mean score of 5.30 and 5.20 respectively, and for *Written Communication* the scores average at 4.93 and 4.99. The means are not significantly different. One possible explanation is that both methods develop competences in these two skill areas.

When the rest of the skills are analyzed, it is not surprising that the simulation is rated highly for the items that are related to managing businesses, because the lecture-centered class would scarcely include these skills for students to practice. These items include *Managing Operations, Risk Taking, Strategic Planning, and Examining Diverse Solutions.* The mean differences in scores between the two methods were in the range of 2.0 to 3.0 scale points.

Exhibit 2.
Sample One: Evaluation of
Simulation Course Versus Lecture-Centered Course on Specific Skills (n=435)

	Simulation		Lecture	
Increase my competence in	**mean**	**std**	**mean**	**std**
Problem solving	5.67	(1.52)	3.83	(1.63)
Running a meeting	5.63	(1.57)	2.97	(1.56)
Examining diverse solutions	5.90	(1.44)	4.02	(2.56)
Thinking on my feet	5.76	(1.51)	3.68	(2.94)
Managing operations	5.81	(1.56)	3.46	(1.64)
Risk taking	6.05	(1.52)	2.90	(1.69)
Team work	6.32	(3.73)	3.62	(1.75)
Strategic planning	6.02	(1.44)	3.85	(1.61)
Interpersonal skills	5.85	(1.53)	3.63	(1.71)
Learning principles and concepts	5.30	(1.45)	5.20	(1.65)
Oral communication	5.52	(1.55)	4.31	(1.65)
Written communication	4.93	(1.49)	4.99	(1.68)

Exhibit 3
Sample One: Overall Evaluation of
Simulation Course versus Lecture-Centered Course (N=435)

	mean	std
Career preparation		
In developing career skills.	2.33	(1.61)
In serving as a good surrogate for real world experience.	1.88	(1.27)
Traditional educational goals		
In helping me understand the material.	3.03	(1.91)
In achieving: "I learn a lot."	2.59	(1.58)
In improving my competences in this area.	2.65	(1.55)
In achieving high educational value overall.	2.98	(1.66)
Use of time		
In making good use of class time.	2.80	(1.90)
In achieving benefits to time.	2.61	(1.70)
Personal involvement and satisfaction		
In producing a high level of involvement.	1.82	(1.37)
In achieving overall satisfaction.	2.41	(1.91)

Exhibit 4
Sample Two: Evaluation of
Simulation Course versus Lecture-Centered Course on Specific Skills (n=153)

	Simulation		Lecture	
Increase my competence in	**mean**	**std**	**mean**	**std**
Problem solving	5.75	(1.40)	3.73	(1.66)
Running a meeting	5.59	(1.58)	2.84	(1.48)
Examining diverse solutions	5.95	(1.28)	3.76	(1.62)
Thinking on my feet	5.85	(1.39)	3.59	(1.72)
Managing operations	5.88	(1.28)	3.22	(1.58)
Risk taking	5.93	(1.53)	2.81	(1.73)
Team work	6.13	(1.41)	3.44	(1.78)
Strategic planning	5.99	(1.35)	3.99	(1.61)
Interpersonal skills	5.92	(1.36)	3.42	(1.56)
Learning principles and concepts	5.24	(1.49)	5.31	(1.74)
Oral communication	5.76	(1.55)	4.31	(1.71)
Written communication	4.85	(1.47)	4.98	(1.79)

Sample Two

In order to examine the validity of the first study, a second sample was taken. The sample consisted of 153 students from four master-level classes of the overseas MBA programs at the same university. The course was required for all the students, of which 65.4% were male and 34.6% were female. The amount of full time work experience varied. 10% had one year of experience or less. 29% had two to four years and 61% had five or more years.

As shown in Exhibits 3 and 4, the results from both the overall evaluations and the specific skills evaluations corroborate the findings from the first sample.

Summary of Empirical Study

The results of our empirical study show that students perceive the simulation course as superior to the lecture-centered method. On the overall dimensions, the simulation course was seen as a better vehicle in helping students make career preparations, achieve educational goals, and utilize time. It was also advantageous in providing a high level of involvement and satisfaction. In addition, the simulation course was viewed as superior on teaching specific skills ranging from managing operations and risk taking to strategic planning and examining diverse solutions.

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