

Developments in Business Simulation & Experiential Exercises, Volume 9, 1982

COMBINING LECTURE AND SIMULATION TEACHING METHODOLOGIES

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ABSTRACT

This article presents a lecture-simulation teaching methodology which combines the strengths of several traditional methods of teaching business policy. Next, the author describes a preliminary laboratory study designed to assess the effectiveness of this methodology in facilitating the transference of course material to a simulation exercise business environment.

INTRODUCTION

Every accredited business college is required to offer a capstone course in administrative policy. This course is designed to integrate the functional areas of enterprise management learned in previous courses and to provide students with new content material on the strategic management process. Thus, students learn the concepts associated with strategic management and a senior executive's perspective of the firm not covered in other courses in the business curriculum. This paper reports the development of a policy teaching methodology which utilizes both a lecture and simulation format, and presents empirically based arguments that it will enhance learning of course material.

ALTERNATIVE METHODOLOGIES FOR TEACHING POLICY

Several methods of teaching Administrative Policy courses are currently being used in business colleges across the country. These existing methods for imparting strategic management concepts and skills fall into four major categories: (1) exclusive use of cases, (2) lectures on policy concepts in conjunction with cases, (3) "living" cases, and (4) management simulations.

Perhaps the most generally accepted pedagogical method for policy instruction is the use of Harvard-type historical cases. Here the instructor assigns cases, instructs on the principles of case analysis, and leads classroom discussions of student case analyses. The students learn strategic management concepts by critically analyzing the strategic decisions previously made by practicing managers.

A second method involves the use of the traditional lecture format followed by case analyses. Proponents of this method argue that the body of strategic management theory has progressed to the point where sound prescriptive recommendations for strategic analysis and decision making can be provided to students.

The "diving" case method can generally take two forms. First, the student is sent to an on-going business to observe its operations. The student reports on the management practices of the firm and develops a series of recommendations to improve the firm's operations. Advocates of this method suggest that exposure to "real world" business conditions increases the students motivation to seek out and learn strategic management concepts.

The second form of the "living" case method requires that the student perform all of the analyses necessary to start a new business venture. This provides a strong sense of ownership and forces the student to use concepts and tools from most of the functional areas of the business curriculum. The cognitive learning is again self-initiated. Experiential skills are acquired via the development of proforma analyses and recommendations for the hypothetical firm.

Finally, the use of a management simulation exercise permits students to derive maximum experiential exposure to strategic management by requiring that they make strategic and operating decisions for their own simulated enterprise. Students receive immediate feedback on the outcomes of their decisions while exposure to strategic management concepts is again self-initiated.

Each of the four predominant approaches described above neglects one or the other components of the learning process. The historical case, "living" case, and management simulation methods can only assume that the student possesses the ability to conceptualize important policy issues from analyses of historical reports of strategic managers or from direct exposure to "real-time" operating decisions. The cognitive component of the learning process may be neglected if this assumption is not valid. Furthermore, these methods seem to deny the contributions of recent strategic management theory.

However, the lecture-case approach lacks the "real-time" and feedback advantages of the experiential methods. Applying modern strategic management analysis and decision making techniques to historical cases limits the student to speculate as to the reaction of other elements in the firm's business environment. Whereas, a simulation exercise allows the student to experientially observe the impact of his/her managerial decisions.

Given the strengths of the various methods discussed above and recent progress in the development of a body of policy literature, we concluded that a lecture-simulation methodology would provide a superior learning environment for strategic management concepts. A course was developed which incorporated lectures on the policy framework and an experiential simulation exercise.

LECTURE-SIMULATION METHOD

The basic issue addressed in this article is the merit of the lecture-simulation method of teaching policy. To operationalize this method, students were given a general orientation on the simulation's goals and decision parameters. The International Operations [IIJ] management simulation exercise was used here. Students were divided into work teams and assigned an on-going company to operate within the simulation environment. All companies were exactly equal at the beginning of the exercise. A trial decision period was provided to allow the students to gain an appreciation for the simulated business relationships. Students also had historical data on their firms which could be used to conduct analyses for several exercise parameters.

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Students were then given a series of three lectures on strategic management concepts. These lectures consisted of an introduction to strategic management and a detailed discussion of the conceptual framework described below. Each stage of the framework was directly related to the decision parameters of the simulation exercise.

THE CONCEPTUAL FRAMEWORK

As mentioned above, the content material presented in class was designed to operate in harmony with the (INTOP) simulation exercise. Therefore, the conceptual framework used was similar to the models developed by Montanan [7] and Wetherbe and Montanan [12] which incorporate several aspects of previously reported strategic policy models. [1] [2] [3] [4] [5] [6] [8] [9] [10]. Briefly, this framework includes eight sequential stages germane to the strategic planning process: environmental scan, review and evaluation of the organization's mission, objectives formulation, development and evaluation of alternative strategies, structural design, policy establishment, control procedures, and feedback.

Stage 1: Environmental Scan

The first stage of the process is a scan of both the external and internal environments of the organization to isolate the opportunities available and constraints acting on the firm. This search is necessary to ensure that the strategic management process incorporates opportunities that meet the organization's investment criteria and is sensitive to current limitations to organizational operations imposed by its constituencies (e.g., federal, state, local regulatory agencies, stockholders, etc.). This stage also involved a comparison between the demands of environmental forces and the capabilities of the firm.

Stage 2: Review and Evaluation of Organization's Mission

Once the initial scan has been completed, the organization should review its original mission or primary focus. The mission statement addresses the question of what business should the firm be in. The decision to be in the energy business rather than only the petrochemical business has resulted in many new opportunities (and constraints) for several major oil companies. This modification to their primary thrust was necessitated by an environmental change (i.e., the reduced supply of their primary raw material)

Stage 3: Objectives Formulation

The organization is now in a position to develop specific objectives. Objectives are defined as manifest statements that describe the specific state a receiving system should attain in a specified time period. Generally, objectives must be reasonable, measurable, have a time horizon specified, and directed toward the demands of the organization's constituency groups.

Stage 4: Development and Evaluation of Alternative Strategies

Concurrent and interactive with objective formulation is the development of alternative strategies to achieve stated objectives. Strategies specify the methods available to the firm for objective accomplishment. Alternative strategies are evaluated on the basis of efficacy, timeliness, cost, and other relevant criteria.

Stage 5: Structural Design

The next stage of the planning process requires that the firm's structure be reviewed and changed, if necessary, to facilitate implementation of the selected strategy. Chandler [3] analyzed the operations of 100 major United States firms and concluded that, in successful firms, the structural configuration was developed subsequent to and congruent with strategies for objective accomplishment.

Stage 6: Policy Establishment

Once objectives have been developed, strategies formulated and evaluated, and responsibilities assigned, policies or general guidelines can be prepared. Policies serve as mechanisms for disseminating information to various departments and levels in the organization. These guidelines provide instructions as to the unit's role in the implementation of strategies for accomplishing the firm's objectives.

Stage 7: Control Procedures

The seventh stage of the strategic management process is the development of detailed control procedures designed to provide specific evaluation criteria for both the adequacy of the planning process and overall organizational performance. These procedures should specify methods of measurements, levels desired, and acceptable ranges.

Stage 8: Feedback

Establishment of feedback mechanisms permits the strategic manager to incorporate data obtained via control procedures into the next planning cycle. This final stage of the planning process points to the dynamic nature of modern organizations by recognizing that environmental responses to the firm's recent actions can be valuable warning flags to the manager.

THE SIMULATION EXERCISE

The simulation used was the International Operations (INTOP) simulation by Thorelli, Graves and Howells [11]. The simulation was run for eight quarters by the faculty administrators to establish a track record of moderate to weak management performance prior to the student teams taking over the management of their respective firms. Thus, the student teams were required to follow the planning model from the environmental scan stage through the feedback stage. This was accomplished through the use of content lectures and assignments tied directly to the INTOP simulation experience.

For example, the students were required to complete a Scenario Analysis paper that was structured to incorporate a rigorous analysis of the current business environment of their firm. They were directed to analyze the market conditions in the three markets (United States, EEC and Brazil) available to them. In addition, a thorough review of prior management performance was required to give the students a sense of how the environment interacted with the firm, given previous management decisions. Finally, environmental conditions were altered throughout the simulation to correspond to actual current business situations. This was operationalized by publishing a weekly newsletter with announcements of current events to forewarn the student managers. Next, the administrators would modify various INTOP parameters to simulate these real world occurrences. Student firms that had planned for the environmental contingencies were more successful at coping with these events.

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Thus, the planning behaviors were positively reinforced throughout the simulation experience.

Another example was the use of objective accomplishment to determine the simulation grade. Student teams were required to submit an extensive planning document which included objectives stated in terms of INTOP parameters. The feedback component of the conceptual framework came into play here. Student teams received immediate feedback on decisions via computer printouts of the financial and operational performance of their firms. They were encouraged to review and modify their planning paper objectives on an annual basis. This permitted adjustment of their objectives to compensate for changing environmental conditions, to compensate for previous poor decisions, and to build both short and long term planning skills. Finally, their simulation grade was determined by comparison of actual performance with the statement of their revised objectives.

The modified INTOP simulation experience in conjunction with the written assignments was designed to directly facilitate and reinforce the use of the conceptual planning framework. A detailed description of the methodology used to operationalize every aspect of the conceptual model is beyond the scope of this paper. However, the reader can see by the above examples how it was possible to provide the student with both a cognitive and experiential link between the theoretical planning framework and the INTOP simulation experience. However, an evaluation of our methodology was necessary to determine if the lecture-simulation format actually enhanced the students ability to apply the strategic planning framework in a setting other than the simulation exercise.

A PRELIMINARY EVALUATION

Approximately 135 final semester MBA students from the same class were included in this attempt to evaluate the learning effectiveness of the lecture-simulation method. Twenty-seven teams of five students per team received the policy Lectures at the same time and competed in the simulation exercise simultaneously. All planning assignments were identical to ensure that all teams had the same opportunities to build strategic planning skills.

Approximately three months after the class lectures, this study was conducted to assess whether students had learned the strategic planning concepts presented in the lecture and had acquired the skills to apply those concepts outside of the classroom setting. A laboratory design was used which incorporated the Space Tower Exercise, a published planning experiential exercise. This method was selected to try to minimize external influences which could contaminate the results.

Twenty-five student teams agreed to participate in the study. Ten teams were randomly assigned to one of two groups labeled "trained" or "untrained."

All twenty student teams were told that they would be participating in a planning exercise. Each team received a brief introduction to the Space Tower Exercise while the teams in the trained group received specific training in applying the strategic planning model presented in class lectures to the Space Tower parameters.

Students received a handout that contained an introduction, summary, and three graphs showing performance parameter relationships. The objective of the Space Tower Exercise was to maximize performance or incentive dollars. The first graph related the number of pieces used to construct the tower to incentive dollars. Next, time of construction was related to incentive dollars. Lastly, a graph depicting the incentive dollars as a function of tower height was provided.

Subjects were directed to plan for twenty minutes, using only the handout materials. After twenty minutes, the Space Tower kits consisting of various sized plastic pieces which fit together were handed out. The subjects could use the kits in any way they wished during this second part of the planning phase.

During the construction phase, teams were timed in the construction of a tower using the pieces provided in the kit. The incentive relationships were set so that a threshold height must be reached before it was possible to generate positive incentive dollars. However, subject teams could set their own objectives and develop any construction strategy that they desired. Team performance was measured on the basis of the four exercise parameters: (1) height of the tower; (2) time of construction; (3) number of pieces used; and (4) total incentive dollars earned. Monitors were present during the construction phase to record team performance on these parameters.

The goal of this evaluation effort was to determine if the untrained teams which were exposed only to the lecture-simulation method in class would perform as well as those teams specially trained in planning for the Space Tower exercise. If we found no significant difference between the trained and untrained groups, then we would have reason to believe that the lecture-simulation method produced both cognitive and skill learning which could be transferred to planning situations other than the class simulation experience.

The Evaluation Exercise Results

Means, standard deviations, and analysis of variance calculations were made for the team performance measures. Pre-established charts were used to convert the three measures of time, tower height, and number of pieces into incentive dollars. Analyses were made using the raw score and the incentive dollars for each measure, as well as for the total incentive dollars, resulting in seven measures for each group. The means and standard deviations for the trained and untrained groups are shown in Table 1.

The analysis of variance summaries is also shown in Table 1. None of the F values are significant at the .05 level. Results indicate that no significant difference existed between the performance of the trained groups and untrained groups for this exercise. Data indicate that the additional specialized training in the use of the strategic planning model failed to provide significantly better performance on exercise parameters than the lecture-simulation method provided in the regular class sessions. These results suggest that the students learned and retained strategic planning material presented in class lectures three months previously. Furthermore, they were able to apply that knowledge in a strategic planning environment which was different from the simulation exercise environment.

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TABLE 1
MEANS AND STANDARD DEVIATIONS

Measure	Trained		Untrained	
	Mean	S.D.	Mean	S.D.
Time-Seconds	235.2	128.2	274.4	135.7
Time-Dollars	51.8	18.6	44.9	20.9
Height-Inches	43.9	5.7	49.1	8.3
Height-Dollars	10.7	6.9	11.1	7.3
Pieces-Number	84.0	38.2	72.1	19.9
Pieces-Dollars	12.6	8.6	14.0	4.8
Total Incentive Dollars	14.3	6.9	15.7	4.7

ANALYSIS OF VARIANCE SUMMARIES

Measure	SS	df	MS	F*
<u>Time-Seconds</u>				
Between Groups	7683.2	1	7683.2	0.3967
Within Group.	348586.01	18	19365.9	
<u>Time-Dollars</u>				
B	236.5	1	236.5	0.5453
W	7806.6	18	433.7	
<u>Tower Height-Inches</u>				
B	128.7	1	128.7	2.28
W	1015.2	18	56.4	
<u>tower Height-Dollars</u>				
B	0.36	1	0.69	0.012
W	1017.1	18	56.5	
<u># of Pieces</u>				
B	708.1	1	708.1	0.687
W	18538.9	18	1029.9	
<u>of Pieces-Dollars</u>				
B	6.7	1	6.7	0.12
W	974.2	18	54.1	
<u>Total Incentive Dollars</u>				
B	9.16	1	9.16	0.238
W	693.17	18	38.51	

*F = 4.41 p < .05

PRELIMINARY CONCLUSIONS

It would be premature to propose conclusions based on the preliminary evaluation effort reported here. Subjective content analyses of video tapes of the planning phase of the evaluation exercise revealed Supporting evidence that untrained teams did use the strategic planning model presented in class and discussed above. This, combined with the ANOVA results, suggests that the lecture-simulation method for teaching policy does have merit. In our limited sample the evidence is quite strong that effective cognitive and skill learning are experienced using this method. A word of caution is in order here. We have only attempted to evaluate the learning effectiveness of the lecture-simulation method for teaching policy. The relative superiority of this method as compared to other pedagogical methods of policy instruction was not assessed here. Further evaluation efforts must be undertaken and comparative analyses conducted before final conclusions can be drawn.

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