MANAGEMENT GAMES AS TEACHING DEVICES

value of simulation depends much on trainer's ingenuity and initiative

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As with any other teaching device or technique, the question of the effectiveness of simulation or gaming* has led to much debate. There is no objective measure; however, neither is there objective measurement of the case method, group participation, or role playing. Nevertheless, administrators and participants alike are convinced of the value of these techniques when properly employed.[1] Such is the main purpose of this paper – a discussion of the appropriate dimensions for the effective use of simulation in management education.

STRUCTURE VS. CONTENT

It has been said that interest is the first rung in the ladder of learning. Although there are academic differences in the terminology, learning theorists and practitioners alike readily recognize that "participation" or "involvement" determines the "interest" level of the student, and that learning is dependent, to a large degree, upon the interest level. Further, interest level is primarily a function of the psychological and sociological dimensions of the learning environment which, when taken together, are referred to as the "structure" or "process" of education as opposed to its content.[2]

Most seem willing to accept the premise that the structure of education is at least as important as its content. Many argue that structure is by far the dominant ingredient. Suffice it to say that the structure of education is attracting an ever-increasing share of attention in an attempt to improve, or at least provide, a meaningful learning experience.

Structural deficiencies arise in three basic areas:

1. The ability of the student to relate his present life to what is being taught;
2. The kind and degree of rewards built into the learning effort; and,
3. The political setting of the instructor vis-à-vis the student.

There are several teaching techniques that have grown out of the constant attempt to overcome the aforementioned structural difficulties. The case method, group discussion, and role playing have been used quite successfully to overcome structural defects as well as to focus the attention of the student on a particular topic.[3] Simulation is the most recent technique to attract widespread recognition as a valuable teaching device.[4] To be sure, the use of a simulation exercise does not necessarily result in a valuable learning experience. As it is with the case method or role playing, situational variables determine the "interest" level of the student, which in the final analysis, is a crucial ingredient – he must be willing to "stay and play" with a sincere positive attitude.[5]

WHY SIMULATION?

The American Management Association introduced the first widely known simulation in 1956. Since that time, the availability and use of simulation as a teaching device has enjoyed considerable growth. The results of a survey conducted in 1962 show that of 90 leading collegiate schools of business, 82 had either been using or planned to use simulation as a teaching technique.[6]

There are several strong arguments purporting the value of decision simulation as an effective management-education technique.[7] First, the participants experience a great deal of personal involvement. Because of the high degree of emotional and psychological involvement of the players, they can become highly receptive to learning new ideas. There is exposure of an individual's behavior, beliefs, feelings, attitudes, and the consequent feedback from others in the group.

Second, the management game is a dynamic and live case focusing attention on the constantly changing nature of business situations. It simulates the decision-making environment of the busines world and telescopes a large amount of decision-making experience into a short period of time. The participants receive feedback as a result of their decisions and are forced to live with their decisions through ensuing business periods.

It enables them to test alternative strategies. The objectivity of the feedback adds to the realism of the situation, and helps make it patternable even though it might be adverse.

Third, there is usually the opportunity to focus on problems in the general area of management with specific emphasis on functional relationships. The problems of organization, policy, short-run vs. long-run goals, and strategy must be encountered. Opportunities are provided to implement solutions to these problems through the application of analytical techniques such as break-even analysis, cash-flow budgeting, rate of return analysis and other decision-assisting tools. Strategic variables must be identified and systematically analyzed in order to obtain maximum information from the mass of data reported. An attempt must be made to forecast both endogenous and exogenous variables.

Fourth, participants are usually able to see the need for the overall company viewpoint rather than sub-optimizing in a specific area. The distortions of subgoal identifications which are different for various members of the firm become apparent. Associated with this is a human relations aspect of personal interactions of the players with other members of the group, and the portrayal of the problems confronting the managers of functions other than one's own specialty. They must work toward the formation of group consensus and decisions.

Finally, the elements of risk, uncertainty, profit and loss are portrayed in a very real sense and must be considered within the framework of decision making. The game itself, and particularly the result, form a common basis for discussion and can be used as a foundation for the employment of other teaching techniques.

In summary, the purpose of a simulation exercise is to create a learning experience for the participants within minimal constraints in terms of both time and dollars. More specifically, to create an awareness of the interaction of variables which result in given outcomes.[8] In other words, to sensitize as to the "why" of certain outcomes, which in turn will cause participants to perform analyses in their own investigations of such interactions and the ensuing outcomes. As it is with most teaching or training techniques, participation or involvement is the key ingredient for the successful use of simulation as a teaching technique. The learning experience is a function of the willingness of each participant to "stay and play."[9]

THE DILEMMA: REALITY VS. COMPLEXITY

It should be copiously clear that a fine balance between reality and complexity is absolutely essential to the overall effectiveness of the simulation exercise. On the one hand, the simulation variables must approach real life as closely as possible (real life as defined by the participants). The parameters should be reasonable within the constraints of the experience and expectation of the participants. Variables such as sales volume, profit levels, market fluctuations, time sequence of the events, span of control, etc. must all fall completely within the limits of acceptability. The simulation decisions (and underlying analyses) should be geared to the participant's level of comprehension and identity. For example, it would be folly to employ a simulation program including the variables mentioned above for a group of first-level foremen. The decision variables must be of the nature as those encountered in everyday business activity.

On the other hand, one soon discovers that greater reality is usually accompanied by greater complexity. As complexity increases, the number and difficulty of the underlying analyses also increases. Therein lies the problem – too much complexity can spell disaster! Realizing that most participants, either students or businessmen, have other demands on their time, it is only reasonable to expect that they will do only that amount of work that fits within the time which they can devote to the simulation. It follows then that, if the complexity and therefore the ensuing analyses exceed that which the participants are willing to devote to the experience, they will remove themselves from competition; i.e., they will do nothing and the situation will degenerate to that of a "game." In other words, too many variables are just as bad, if not worse than, not enough variables.

ANALYSIS NOT OUTCOME

It should be remembered that it is the analysis, not the outcome of the exercise, which is the most important in contributing to the learning experience which the simulation is intended to create. There are several simulation exercises in which there appears to be an obvious attempt to account for each and every facet of possible impact; consequently, the number of variables makes it virtually impossible for the participants to constructively analyze the "why" of the outcome. To be sure, there are top-level executives in the real world who are confronted with several competing products in different price ranges sold in geographically separated areas with trans-shipments; however, it seems that most college students and middle level managers have neither the equipment nor the inclination to analyze and understand the multitude of inter-relationships which would influence the outcome in such a problem. For most of us, the analysis of one product with one price sold nationally is usually sufficient challenge in terms of both time and intellectual sophistication.

DECISION GROUP ENVIRONMENT

Because the psychological and sociological processes within the group are vital to the learning experience, particular attention should be paid to the size and degree of structuring of the decision-making group.

First, the number of group members must be such so as to facilitate intra-group processes such as dependency, counter-dependency, pairing, inclusion, leadership, coalition formation and con-

trol. Past experience indicates that three is the ideal group size. Fewer than three greatly reduces the opportunity for group processes, while more than three seriously increases the probability of impasse.

Further, the need and degree of involvement seems to decrease as group size increases. Obviously, group size might vary with the number and sophistication of analyses to be performed; however, three can handle the work in most situations.

Since one of the lessons in management decision-making is the structuring of the decision environment, it seems advisable to keep external guidelines or structuring to a minimum thereby causing the group members to grapple with the organizational problems of their own group. The assignment of analytical tasks, the quantity and quality of analyses to be performed, the definition of decision-making procedures and the mechanics of intra-group rewards and punishments are best left to the group.

Finally, it is the opinion of this writer that the most crucial element in creating a learning experience is that of physical facilities. As pointed out early in this article, the learning experience is dependent upon creating a business-like approach to management decision-making, and that certainly includes the proper atmosphere. A private room, free from interruption and disturbance, is an absolute minimum. Preferably, the room should be equipped with a table and chairs so that participation by the group members might be maximized. Considerations such as light and ventilation can be important.

TIMELINESS OF FEEDBACK

As mentioned previously, the reward system is vital to effective learning.[10] The results of a decision must of necessity be related to the causal factor of that result both in terms of time and reason. In the most common business simulation exercises wherein inter-group decisions create a keen competitive environment, it is imperative that the feedback be not only timely, but completely within the realm of reasonableness. Participants must be able to analyze how outcomes might have been more favorable, and thereby be able to improve upon their previous decisions. By so doing, their strategy takes the form of a process which develops over the course of the exercise. To be sure, the final goal is to "win"; but, more importantly, participants should be able to relate to the "how" of winning. The event of winning or losing is not nearly so important as is the why and how.

Ideally, the flow of decision feedback maintains a sharp inquisitive spirit among the participants. Consequently, the regular and reliable distribution of feedback data becomes of vital importance. All too many computer refereed simulation programs have failed simply because the administrator and/or his assistants encountered frustrating difficulty in running programs through the computing hardware. When this occurs, the timeliness and competitive spirit are lost and the learning experience rapidly deteriorates.

SUMMARY

If in fact simulation is perceived to be an effective teaching device which can overcome many of the aforementioned structural defects of education, there are several subtle but crucial points to be observed:

1. The simulation must possess sufficient sophistication to challenge and stimulate the interest of the participants throughout the desired number of plays or time periods; however, complexity beyond the comprehension or acceptability level of the participants will usually lead to an ineffective learning experience.

2. The simulation must be simple enough so that the rules of play can be mastered in a relatively short period of time and comprehended throughout the play.

3. Be realistic enough to cause the participants to feel that they are participating in a business-world atmosphere.

4. Feedback must be regular, accurate, and reasonable.

In the final analysis, the value of simulation as a teaching technique is very much dependent upon the ingenuity and initiative of the administrator, much the same as it is with role playing, group discussion and the very popular case method.

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*It seems an unfortunate selection of terminology to refer to such activities as business "games." It might be argued that, in order to realistically achieve a learning experience, the "game" atmosphere must be replaced by that of a business-like approach to management decision-making.