SIMULATION: A FRUSTRATION, A 'GAME', OR A MEANINGFUL LEARNING EXPERIENCE

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At first encounter, many students find simulation games to be very complex. As they overcome their initial frustration, the game becomes more challenging and beneficial. However, many students soon determine (justifiably or not) that they have discovered "how to play to the game" and their subsequent actions reflect their decreasing interest in the game. This paper discusses steps that the game administrator or developer may take which will reduce the initial student frustration as well as allow the game to become increasingly complex and challenging as play develops. Most suggestions concern the development of a marketing management game comparable to such existing games as Marketing in Action, MARKSIM, Marketing Strategy, and Compete.

INTRODUCTORY STAGE: NOTES ON THE REDUCTION OF FRUSTRATION

Initially each firm should face a very limited set of decisions. Many existing games do restrict the decision making in the first period or periods. For instance, each team in the Marketing in Action game is required to make the same decision set for the first period. The INTOP game requires that the first few periods be spent building factories and scheduling production. These games seem to delay, rather than circumvent, the frustration faced by the players when they are suddenly faced with determining the complete set of decisions for themselves. The suggestion offered here is that the number of decisions required of the player be small initially and then gradually increased as the game progresses.

By forcing all firms to operate under certain environmental or competitive restrictions, the administrator may limit the number of initial decisions required for play. For example, placing the firm in a situation where the demand for its product is greater than its short-run capacity essentially eliminates the scheduling problem--a frequent cause of initial student frustration. For products subject to seasonal sales variation, beginning play "in season" rather than "out of season" also seems to simplify the initial scheduling decisions as well as to provide positive reinforcement through sales and profits. By the time the "off season" arrives, the player firms should have developed enough expertise to deal with the decreased demands.

Beginning play under government price controls also simplifies the initial decision sets. The administrator may also restrict the 'place' decisions by limiting the number of outlets available to the firms or similarly limiting the initial distribution alternatives.

ADDITION OF COMPLEXITIES AS THE GAME PROGRESSES

The gradual removal of the initial constraints facing the teams will be one source of added complexity to the decision process. Also existing games have certain dynamic adjustments built into them (as opposed to the dynamic

aspects of the game due to the competitive environment) such as fluctuating demand due to seasonal, trend, and cyclical factors. Certainly other factors besides the demand could be allowed to vary seasonally or cyclically. For instance, if the game allows the advertising allocation to be broken down by specific media (the Marketing in Action game used at Kansas State University was modified to include a crude media breakdown), then the importance of the various media could vary according to the time of year. Television could be specified as the dominant media in the fall, and its importance might diminish during the summer months.

Another type of environmental change that could be easily built into the game would be the random occurrence of events such as strikes, destructive "acts of God," and thefts or hijackings. An occurrence of such magnitude as a strike at a firm's plants probably should be handled through the administrator (with changes to the history deck or through the case of a special administrator decision card) so that the firm could be given some warning of the impending setback. However, strikes affecting all of the firms' distribution structures could be included on a random basis. Fires or storms that destroy part of a firm's inventory likewise could be included on a random basis. These random events could be added with a minimum amount of programming: the event would occur if a very small random number was generated; the firm or firms affected would be notified of the event through an additional output statement; and the necessary changes would be made to the industry demand (in case of a strike), or to the firm's inventory and accounts receivable (in case of a fire, storm, or theft and the subsequent payoff by the insurance company).

Another consideration might be the inclusion of variables which the administrator could manipulate at his discretion. The Marketing in Action game has the flexibility of assessing a tax on nonreturnable bottles. This tax has the secondary effect of increasing the demand for beverages packaged in returnable bottles, thus providing even more incentive for the team members to reassess their current packaging policies. Other additions might be devised so as to allow students to add "creative" elements to the game. For example, after the fundamentals of developing a brand name have been covered in class, the teams may be assigned the task of creating a brand name for their product in the game. The brand names can be evaluated by experts (possibly students in a consumer behavior course) and then weighting factors derived from the ratings. A possible weighting factor might be

$$1 + (BNR - \overline{BNR})/C$$

where BNR is the rating for the first team's brand name,
   BNR is the mean brand name rating, and
   C is a constant, the magnitude of which depends on how much importance the administrator
   wants to place on the brand name decision.
The weighting factor for each team would become another multiplier added to the team's demand equation. When the class covers the promotion section of the course, they could be assigned to develop a slogan for their product which would become another factor in the determination of the firm's demand. Some slogans developed for cola beverages in the Marketing in Action game are listed below (brand names underlined).
    Get the royal taste, drink-King Cola!
    Add *Sparkle* to your life.
    Echo is Good Time After Time After Time

Such additions would require the administrator to change some history deck values. However, these additions would allow players to feel that their creative efforts had a direct effect on play performance rather than the often almost indistinguishable effects that result from changes in the marketing mix.

Another form of complexity that could be added to the game is the capability of producing and marketing a new product line once a firm had reached a certain level of maturity. While several games allow the possibility of multiple products, most of these add very little challenge since they can be handled by the same general marketing policies. The option to market products requiring, for instance, a different mode of distribution and/or different forms of promotion would provide the players with new challenges. The obvious objection to this suggestion is that the programming needed to accomplish this change would be quite extensive. However, it should be fairly simple to build a very general main program that does all the manipulations associated with any given product. One could then add a series of sub-programs that would develop different demand equations for the different products.

EVALUATION OF THE PLAYERS' PERFORMANCES: FORCED "MEANING" TO THE GAME

The term "simulation game" alone is sufficient to create a lackadaisical attitude among some students toward this type of learning experience. The fact that the instructor views the game seriously [as evidenced by the amount of time he allocates to it and by the impact he assigns to it in the determination of the final course grade] can be a very important factor in the removal of the "it-is-just-a-silly-game" syndrome. On the other hand, most instructors probably feel somewhat reluctant to weight the performance in a game too greatly since there are random factors involved. It is not a rare occurrence that one firm corners the market early due to an arbitrarily made but theoretically correct set of decisions.

Three different sections of Introductory Marketing at Kansas State that had used the Marketing in Action game were asked what weighting they feel should be used (the options were 0%, 10%, 20%, 30%, or 50%).

TABLE 1
Student Opinions as the Weight of the Game in the Overall course
Grade (assessed at the end of the semester)

Weight	0%	10%	20%	30%	50%
Frequency	28	52	21	9	3
Percentage	24.8	46.0	18.6	8.0	2.6

The implication from Table 1 is that the students felt that the game should receive a weight of approximately 10%. One reason that these results seem to be quite interesting is that the importance of the game was weighted differently in the different sections, and the distributions of student's evaluation of the game's impact on the course grade were almost identical

(x^2 = 1.68, 3 degrees of freedom, p-value between .750 and .500). In two of the sections the game was given no weight unless the students failed to make any discernible effort, in which case their course grade was lowered one letter grade. In the third section the game was weighted 15%. The professor who had given the game little impact in the Fall, 1973 semester has changed his grading policy such that the game is now the equivalent of one test grade (or a weighting of roughly 20%) and his impression is that his students are taking the game much more seriously this semester.

CONCLUDING COMMENTS

This paper has attempted to make several recommendations aimed at making simulation games more meaningful learning experiences. Some of the comments have discussed policies that the administrator can take in order to create more interest in the game. However, most of the suggestions have been concerned with the development of future simulation games. Due to the complex nature of most games and to the time constraints that most administrators face during the time that the game is played, the administrator is greatly dependent upon the game selling itself to the students. It is often very difficult to devote a great deal of time early in the course to the introduction to the game, to give a great deal of comprehensive feedback on the players' progress in the game throughout the semester, and yet still cover all the material that the student is expected to learn in an introductory course. Some of the burden can be removed from the administrator if the developer of the game is aware of the problems that students face with simulation games and thus develops a game that becomes increasingly complex and challenging as the student becomes acclimated to the nature of the game and the theory covered in the course itself.