

Simulations, Games and Experiential Learning Techniques:, Volume 1,1974

EXPERIENCES WITH THE HARVARD MANAGEMENT GAME

Ralph M. Roberts, The University of West Florida

The Harvard Management Game [1] was introduced at The University of West Florida in the Fall of 1971, as the primary teaching instrument in the capstone, integrative, business policy course required of all Management majors. It was an immediate success. Students were enthusiastic and highly motivated, the faculty found the new teaching experience an enjoyable change of pace, and the University's educational purpose was better fulfilled.

OPERATION OF THE GAME

The Game is played each quarter at the University. Experience has shown, to be discussed later, that the optimum length of Game play consists of 16 decisions which simulates four years of operation. This requires a tight schedule so during the second class meeting teams are formed and the Game history is distributed. After the third meeting a practice decision is due which is subsequently deleted from the computer tapes.

After the practice decision the class does not meet but the instructor makes a special point to provide extended office hours for individual team questions. Students are given two or three days between each of the first several decisions and then the schedule is accelerated to allow the necessary 16 decisions.

After several decisions the students are introduced to the University's on-line interactive terminal facilities. These teletypewriter units provide access to four independent programs. These programs predict sales, production and profits. Each student is required to run at least two programs.

At the beginning of each simulated year a statement of team goals is required, which includes the following: net income, return on assets, return on equity, percentage debt, earnings per share, dividends, and share of market. After each year detailed annual reports are required and annual performance reviews are held with each team individually to discuss goal attainment and other results. In these meetings the instructor assumes the appropriate role: helpful, benign, chiding, or threatening, depending upon team performance and ability. The fourth annual performance review is held during the final exam period with each team making a brief presentation about learning experiences to the class and answering questions from the class.

ADVANTAGES OF THE HARVARD GAME

The Harvard Management Game is a very complex, interrelated simulation. It requires students to integrate a number of business functions and to balance the total business operation in an economically and competitively changing market.

Simulations, Games and Experiential Learning Techniques:, Volume 1,1974

It offers enough predictability to encourage student attempts at performance optimization. At the same time unpredictable competitive actions and somewhat unpredictable economic happenings provide realism and new challenges each period. As students become more familiar with the various interrelationships unpredictables become more predictable and the flow of commerce through a firm becomes clear. The Game rewards stable behavior (policy setting), but also requires adjustments to the changing Game environment. After 16 quarters the value of long-range planning and policies as well as consistency in decision making is clear. Also the fine line between adaptability and stability is understood. These concepts are usually discussed in the last performance review by several firms.

SIXTEEN QUARTERS OF SIMULATION

Sixteen quarters is the optimum simulation period for the Game. Each firm begins with very serious financial and production problems but the first year the business index is reasonably high, providing a propitious atmosphere for recovery. The second year offers a weak market requiring a student to deal with excess capacity, mounting inventories, and increasing debt.

Also the instructor requires that a new product be on sale by period eight. This clearly provides additional learning experiences but the complex sequential activities required are usually mismanaged resulting in serious new product losses and additional weakening of the firm's position.

The third year economic environment allows most firms to get into reasonably good condition and the fourth year is a boom which causes problems exactly opposite from those of the first two years. Market opportunities soar, causing stockouts and shortages of productive capacity. The high sales level improves each firm's financial position causing an unexpected payback of loans, a loss of leverage, an excess of cash, and a declining return on assets. In all, an extremely varied challenge is offered to the students through 16 periods of simulation.

USE OF OPERATIONAL STATEMENTS

Another area of learning and practical application afforded by the Game is the use and interpretation of the many operations statements provided by the Game. Student printouts consist of six and one half pages of data including an income statement, a balance sheet, a plant capacity report, a financial ratio report, a cash flow statement, a production and inventory report, an industry report, and reports for each product. Each of these must be analyzed in depth for decision making which brings financial and industrial reporting alive for the students. Also a summary faculty report is generated which displays the results of each of the previous eight decisions. This report is made available to the students for longitudinal comparative analyses.

Simulations, Games and Experiential Learning Techniques:, Volume 1,1974

The industry report provides limited data about all other firms and gives the students an opportunity to analyze their competition. The experience of analyzing and attempting to outmaneuver a thinking opponent is unique to the Game in the Management curriculum.

STUDENT OPINION

Student opinion about the Game is extremely favorable. Each quarter a questionnaire is completed by the students. It asks for comments about the team playing, the extended simulation, and the educational growth and development afforded by the Game. These surveys indicate that approximately 5% of the students do not approve of the Game. This in many cases can be attributed to unfulfilled grade expectations. An additional 5% of students are neutral in their opinion about the Game, ranking it about equal with other more traditional courses. Another 40% of the students, are more positive toward the Game than other courses and also positive in the absolute sense toward the Game. Approximately 50% of the students indicate that the course in some way is the best they have taken. This ratio is high, but it seems to hold reasonably constant.

Students indicate great motivation because of a fear of letting their team down, thus they spend more time working with the Game than other courses. In the survey the students also discuss their increased awareness of the interrelationships of each function in a business enterprise and how a weakness in one area affects the other areas. The students indicate an awareness of the difficulties of “real world” management and the necessity of long and short range planning and policy setting.

The Management Faculty offers a number of behavioral courses based upon small group exercises and experiential learning. Many students comment that the teamwork and interaction required by the Game caused them to apply and relearn important behavioral concepts learned in previous courses.

SELECTED GAME SINGULARITIES

Students indicate some difficulties in understanding the Game manual. They believe that the manual is less complete and less definitive than it should be. To overcome this criticism a handout is provided at the first meeting, and at the second meeting the handout and the manual are discussed in some detail. Also the instructor’s availability provides an opportunity for answering the many questions which arise.

One aspect of the manual and simulation which is never understood by students is the automatic purchaser which provides adequate materials and parts for predicted production rates. Students attempting to control inventory by ordering needed quantities provide incorrect input into the automatic purchaser, which creates inventory problems.

Another aspect of the Game which deserves mention is its changing complexion each academic quarter. The Game, with each of seven teams following different strategies, is relatively different each quarter.

Simulations, Games and Experiential Learning Techniques:, Volume 1,1974

Policies and decisions which were effective in one quarter may be wrong later so a possibility exists that prior students may provide inappropriate advice to current students. This situation is discussed in the first class meeting, with emphasis upon the students' total responsibility for their decisions.

The interactive on-line terminals seem to be of little value. The regression program which predicts sales is not accurate and the profit-ability programs assume 100% efficiencies in a finely tuned firm. The production program is accurate and offers the greatest usefulness to the students. Except for the experience with interactive terminals, students would lose little if they were not available.

Another aspect of the Game which has become evident after several quarters of play is the disadvantage of introducing a very high priced product. At the beginning of the Game there does appear to be a unexploited market for high priced products but inevitably these products never become viable and the firm suffers in relationship to firms offering three strong products. To eliminate this situation the instructor announces price constraints.

Another misleading feature of the Game occurs in the decision input form. The form has a space to hire new men for each product which indicates that newly hired men can be specifically assigned to a particular product. Occasionally teams wish to hire men to begin work on a product which has high inventories while at the same time assigning more productive seasoned men to another product which has low inventories. The program, however, assigns the new men directly to the product that actually receives additional men.

ADMINISTRATION OF THE GAME

Interrelationships with computer services, grading, team interactions, and clerical needs require consideration in operation of the Game.

Grading has always been a difficult matter. The best system which has been devised to date is the following: sometime after the first performance review and annual report are graded and the team standings for the first year are known, a class meeting is held to discuss grading criteria. The following criteria and weightings are mentioned by the instructor as having been suitable in the past: firm performance in the Game (30%), peer evaluation (25%), performance reviews (25%) and annual reports (20%).

These weights provide a 50% team grade which all team members receive and a 50% individual grade determined by instructor assessment of each individual and student assessment of each individual. After this proposal is presented the class is encouraged to freely suggest a better system. A vigorous debate always ensues and the instructor's suggestion is usually accepted with perhaps slight changes in weighting. After eight quarters of play, peer evaluations are obtained and mid-term advisory grades are issued to bring students' expectations closer to reality.

Simulations, Games and Experiential Learning Techniques:, Volume 1,1974

Firm performance criteria as one important aspect of course performance criteria were the subject of experimentation in the first two years of the Game. Efforts were made to develop criteria which were representative of the Game, long term in nature, motivational toward traditional free enterprise objectives, and not subject to direct manipulation. The criteria which evolved are net income, return on assets, and return on equity, all computed over the 16 quarter simulation. Students offer practically no complaints about these criteria. Other criteria found to be less satisfactory include, for example, asset size, dividends, and earnings per share.

Another feature of the Game, which the instructor must be prepared to accept is the highly predictable occurrence of dissension among team members. Some dissension promotes careful thinking and learning, but on the average every quarter one student will ask the instructor for some alternative other than remaining on his team. With the Game fully utilized (seven firms) there is little an instructor can do. In instances where less than seven firms are being utilized the instructor operates one firm, not to the best of his ability which is available for dissenters.

Similarly, almost every term a student becomes extremely displeased with his grade. This usually occurs when a student with a very high point average participates with a team which does poorly. The resultant grade gives rise to predictable and unpleasant discussion.

Class size is an administrative factor which deserves mention. The Game will accept seven firms which, given teams of four members, limits the class size to 28 students. Seven teams stretches the instructor's ability to be aware of each team's specific progress. If the game were expanded to two independent industries, providing 14 teams for 56 students, the instructor would not be able to monitor the continuous progress of each team. Occasionally at this University the instructor feels pressure to make the expansion, but this has been successfully resisted using the argument of a likely decline in instructional quality.

The complexity of the Game prevents easy transfer of the course from one instructor to another. It would be difficult for an instructor to learn the Game by himself as he proceeded through the course. The writer team-taught the Game with another instructor for two quarters before assuming full responsibility for it. This made learning the Game an easily manageable process although even after assuming the Game, the writer conferred with the previous instructor on many occasions.

Secretarial and clerical requirements of the Game are much different than those required by a lecture course. The input and output of 17 decisions must be processed every quarter including the practice decision. This amounts to a considerable amount of clerical work. Decision sheets must be accepted from students and transported to the computer center. After keypunching a card reader output must be verified against the original decision forms and corrections made as necessary. The next day the Game results must be obtained from the computer center and made available for student pickup. These tasks require a considerable amount of fragmented time which continuously disrupts a working day.

Simulations, Games and Experiential Learning Techniques:, Volume 1,1974

At this University, these duties are assigned to a secretary, and it is understood that this does require and disrupt a significant amount of secretarial time; perhaps 15% of a work week.

The computer program itself poses some problems to the computer operators particularly in starting and debugging the program. The computer technicians who are familiar with the Game state that the program has been adapted, patched and reworked so that it is very difficult to read and understand. In fact programmers at this University, even after several years of successful operation, maintain that they do not fully understand the program.

Another programming aspect concerns the number of firm histories which are available with the program. There are five firm histories even though the program can process seven teams. This appeared initially to be a problem but experience has shown that simply duplicating two of the original five firms is a totally adequate solution. After two quarters of the simulation it is nearly impossible to determine which firms began the Game in identical situations.

NEW DIRECTIONS WITH THE GAME

Presently two additions are being implemented in the Game. A previous student who was very successful in the Game and successful in his previous organizational development/process consultation courses has been employed to provide consultation to all firms. He plays no part in the grading of the course and so is cast into a completely nonthreatening, helpful role. The consultant provides both content and process consultation to each team. The content consultation consists of yearly reports on the weaknesses and strengths of each firm. These provide a basis for fruitful discussions between the consultant and the firm. The process consultation consists of an evaluating of each team's interpersonal relationships and decision making processes about half way through the Game. After the evaluation teams who request help are provided an appropriate team building intervention by the consultant.

The second addition to the Game is a research effort. A Group Dimensions Questionnaire which seeks to measure a number of group characteristics is given to each student after each year of the simulation. The data will be used to explore relationships between group dynamics and team performance as measured by the Game.

The Management Game offers students a complex, varied, and highly motivational learning experience. In all, the Game offers a worthwhile experience to the students and a pleasant teaching experience for the instructor.

REFERENCES

1. McFarlan, F. Warren, James L. McKenney and John A. Seller, The Management Game, (New York: The Macmillan Company, 1970).