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The objectives of simulation game designers and users are presumably to have game players experience something of the system the game simulates and, in the process, learn about that system. But first players must learn the rules and mechanics of the game itself. Players who are still trying to understand the rules of the game when game play ends have not learned or experienced all that the game offers. Although no hard evidence has been developed, a threshold of gaming experience might be hypothesized. This threshold is the point when players have overcome the rules-and-mechanics barrier and are experiencing the simulated system in full bloom of the interactions built into the game by its designer.

Means to take players beyond this learning-barrier threshold have been developed. Practice decisions before official play starts help to overcome the barrier. Tests and quizzes on the rules of the game motivate students to read the players manual and serve to schedule reading of the manual. Additionally, specifically designed homework exercises to teach the rules and mechanics are offered by some business simulation games. These exercises may also teach concepts of the system being simulated. Many times the quizzes and exercises are graded as input into the final course grade.

PLAYING THE GAME TWICE

Seldom do we hear of administrators deliberately asking players to experience the game more than once. Apparently it is felt the motivation and involvement characteristic of game players would not persist through a second play. Why play the game twice in a single course or program? Answer: As one more means to overcome the rules-and-mechanics barrier.

The author has developed an administrative procedure using THE IMAGINIT MANAGEMENT GAME in which students play the game twice in the same business policy course. The objective of this plan is to produce as sophisticated players as possible for the second play. In addition, one practice decision, exercises, and quizzes on the manual are also used. The first play of the game is shorter than the second play and is called a miniplay. The second play is called a maxiplay. The maxiplay requires more than twice the calendar time of the miniplay. All features of THE IMAGINIT MANAGEMENT GAME are incorporated into the maxiplay. These features will be described later.

Course Description

The author uses THE IMAGINIT MANAGEMENT GAME as approximately half of an integrative, capstone, business policy course. Case analysis constitutes the other half. The class meets twice a week. Each week one meeting is devoted to game play, and the other meeting is devoted to case analysis. The course might be

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thought of as two half-courses, run in parallel. Both halves require student participation as teams. To avoid confusion, team membership is the same in each half. Teams are reconstituted with changed membership in the middle of the course between the miniplay and the maxiplay of the game. The reconstitution also changes the case analysis teams. An effort is made to avoid students working with the same students twice. The student grade for the course is based half on game performance and half on case analysis.

Miniplay-Maxiplay Scheduling

Scheduling of this double-play of THE IMAGINIT MANAGEMENT GAME for the business policy course is shown in Figure 1. The miniplay is not merely a practice play because it is evaluated and graded and team membership is changed afterwards. There is one practice decision for the miniplay. This is preceded by a presentation during the introductory class session of a “caricaturized” practice decision. The players manual for THE IMAGINIT MANAGEMENT GAME is designed for phased reading, that is players are not required to read the entire manual before play begins. This phased reading and quizzes on it are distributed through the early part of the course and roughly parallel the miniplay. Notice in Figure 1 that no practice decision is provided for the maxiplay.

A feature of THE IMAGINIT MANAGEMENT GAME players manual is a set of exercises designed to teach both rules of the game and many aspects of the system being simulated. For the business policy course, fundamental concepts from prior courses are built into the exercises as review. Another feature of THE IMAGINIT MANAGEMENT GAME is a set of policy and strategy assignments that the game administrator may grade with the grades entering the computer model and affecting consequences of player decisions.

FIGURE 1

<u>Week</u>	<u>Decisions</u>	<u>Quizzes</u>	<u>Assignments</u>
1	(Introduction)		
2	Practice	x	Exercise
3 (Miniplay)	Year 1	x	Exercise
4	Year 2	x	Exercise
5	Years 3-4-5	x	Exercise
6 (Maxiplay)	Year 1	x	Exercise
7	Year 2	x	Policy
8	Year 3	x	Policy
9	Quarter 1		Policy
10	Quarter 2		Policy
11	Month 7		Policy
12	Month 8		Policy
13	Months 9-10	x	
14	Months 11-12-1		Policy
15	(Review and Evaluation)		

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Policy and strategy assignments are incorporated only in the maxiplay. Near the end of the maxiplay, a final quiz is given on rules for the last decision, although the reading for this quiz is assigned much earlier for the last decision in the miniplay.

Exercise Assignments

The exercise assignments scheduled early in the course paralleling the miniplay are intended to review elements of functional courses pertinent to IMAGINIT play and also to make explicit the rules and mechanics of THE IMAGINIT MANAGEMENT GAME. Exercises are individual student assignments, while policy and strategy assignments are done by teams. These exercises are as follows:

- Finished Products Inventory
- Income Statement
- Balance Sheet
- Management of Inventories
- Cash Management
- Shifts and Capacity

Policy and Strategy Assignments

Policy and strategy assignments that are graded by the administrator with grades entering the computer model are a feature of THE IMAGINIT MANAGEMENT GAME that allows game play to go well beyond a numbers game. These assignments may be done by players as presentations, wall displays, or written reports, at the discretion of the game administrator. In the schedule presented in Figure 1, when combined with case analysis for the business policy course, only short reports are required for policy and strategy assignments. These are team reports, while exercises are individual student assignments. The policy and strategy assignments available in THE IMAGINIT MANAGEMENT GAME and used in this double-play administrative technique are as follows:

- Initial Team Organization
- Initial Overall Policy and Strategy
- Decision Rationales
- Employee Policies
- Marketing Strategy
- Financial Strategy and Dividend Policy
- Production Policy and Strategy
- Administrative Policy
- Final Overall Policy and Strategy
- Final Team Organization

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Industries Simulated

Playing the game twice in a single course or program is attractive when the game can be changed between the two plays. The feature of THE IMAGINIT MANAGEMENT GAME that makes a double play interesting for players is IMAGINIT's ability to simulate any number of manufacturing industries. Using this feature, the maxiplay can differ substantially from the miniplay.

In teaching several sections of the business policy course, the author uses a single industry in all sections for the mini-play. This is the IMAGINIT Breakfast Cereals Industry described in the IMAGINIT player's manual as an example industry. In sections with large enrollments, two breakfast cereals industries are run in parallel for the miniplay.

For the miniplay, a new industry is announced, its parameters provided, a starting position report distributed, and the first policy and strategy report is assigned. At this time team membership is changed. In large classes, industries are run in parallel, but these are different industries. With IMAGINIT, it is possible to run different industries throughout all course sections and from term to term. Including the example breakfast cereals industry described in the player's manual, the IMAGINIT industries supplied by the publisher are:

- Breakfast cereals
- Early television
- Automobiles
- Encyclopedias and books
- Home laundry
- Home climate
- Home computers
- Tires
- Post WWII typewriters
- Washing products

Any one of these industries may be selected for the maxiplay. Of course, the miniplay industry could be repeated if desired.

EVALUATION OF GAME PERFORMANCE

Playing a game twice while changing industries, parameters (especially elasticities), and team membership presents new problems of evaluating player performance. A scoring criterion is built into THE IMAGINIT MANAGEMENT GAME, although many administrators use other criteria. This built-in criterion (which the author uses as the sole criterion of team performance) is the simulated stock market quotation generated by the team for its simulated company at given points of play, usually at the end.

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Grading Weights

For the business policy course, game play is 50% of the course grade for a student, The fifty percentage points for game play are divided as follows:

Game quizzes	10%
Exercise homework	10%
Miniplay grade	10%
Maxiplay mid-play grade	10%
Maxiplay ending grade	<u>10%</u>
	50%

The mid-play grade for the longer maxiplay was introduced after student feedback complained the ending grade did not reflect good game performance early in the play.

Grades for Game Performance

Since IMAGINIT industries vary in potential and in elasticity parameters, grades for game performance are assigned separately for each industry. Using the criterion of mid-play or ending simulated stock market quotation, the highest quote receives an A and the lowest a C. The lowest is subtracted from the highest and this range is treated as a percentile range. Letter grades are assigned to market quotes wherever they fall within the range of percentiles as follows:

<u>Percentiles</u>	<u>Letter Grade</u>
90-100	A
70-89	A-
31-69	B
11-30	B-
0-10	C

Peer Ratings

Since game performance is a team effort, a peer rating method is used to translate team grades to individual grades. Peer ratings are obtained at the end of the miniplay, at the end of the maxiplay, and from each team after its case analysis presentation. The peer rating methodology has been described elsewhere [2]. Essentially it generates a multiplier of the team grade for the individual team member.

CONCLUSIONS

Controlled comparative data are not available, End-of- course questionnaire responses indicate improved effectiveness in achieving learning objectives for the business policy course. Perhaps the most dramatic effect of this double play technique is the substantial reduction of questions asked by players near the end of play about elementary rules and mechanics of the game.

REFERENCES

1. Barton, Richard F., THE IMAGINIT MANAGEMENT GAME. (Lubbock, Texas: Active Learning, 1974)
2. Barton, Richard F., "Peer Evaluation of Individual Performance on a Team," Proceedings of the 14th Annual Conference of the North American Simulation and Games Association, Los Angeles, 1975.