

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

## THE USE OF A BUSINESS GAME AND A SIMULATED STOCK EXCHANGE IN A BUSINESS POLICY COURSE

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### INTRODUCTION

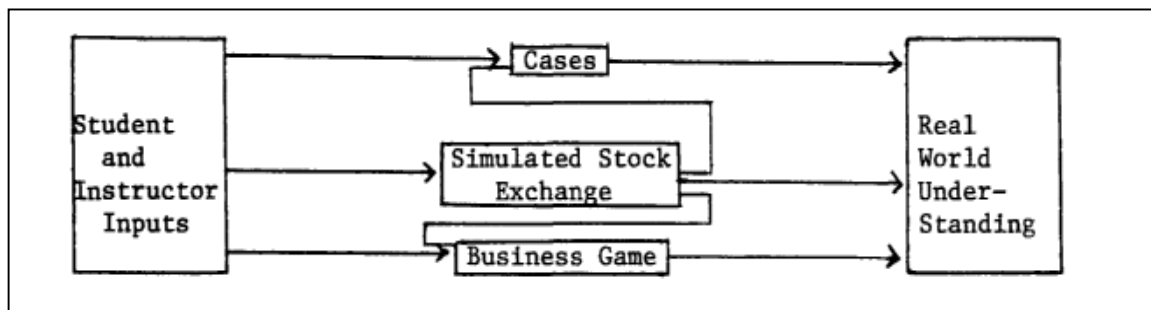
A good deal of attention has been devoted to the study of learning methods used in business policy courses. This paper describes one such study employing a learning method which has received relatively little use. The learning technique in question is a simulated stock exchange. Included in the paper is a discussion of the setting and formation of the stock exchange, operation of the exchange, and analysis of the responses to a questionnaire given to students in the business policy course in which the simulated stock exchange was used.

### SETTING AND FORMATION OF STOCK EXCHANGE

The setting for the simulated stock exchange was a senior level business policy course in which both cases and an interactive business simulation game were used (The Executive Game). Students were grouped into teams for the purposes of presenting cases in class and making necessary decisions in the business game.<sup>1</sup> The simulated stock exchange was introduced into the course with the hope that it would reinforce the learning which took place via the business game and the cases and also possibly contribute directly toward increased understanding of “real world” business operations. Some possible learning paths are shown in Figure 1 although it must be stated that only the paths involving the business game and the simulated stock exchange are considered and investigated in this study.

FIGURE 1

Learning Paths



<sup>1</sup> Decisions required of students each period in this particular game include amounts to be invested in research and development, marketing, maintenance, plant, raw materials, and dividends to be paid as well as production volume and price of the company's product.

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Formation of the simulated stock exchange required a good deal of work on the part of the students in the course. Tasks which were undertaken and performed by the students included designing and printing of stock certificates, underwriting of the initial issuance of shares, receiving and accounting for funds,<sup>2</sup> distributing of liquidating cash dividends, recording and reporting stock prices and trading volume,<sup>3</sup> collecting and publishing company financial data, analyzing reports of stock transactions by insiders,<sup>3</sup> and performing Security and Exchange Commission functions.

### **OPERATION OF STOCK EXCHANGE**

Initial issuance of stock was on the basis of \$1 for each block of 1 share in each competing company (group of students) in the business game. Following initial issuance of stock, trading could be by means of cash purchase of individual company shares, trading of shares in one company for shares in another, or any other means agreed upon by the buyer and seller. Whatever trading technique is used, it was the responsibility of the buyer to report the transaction to the chairman of the exchange so that it could be posted. Stock certificates were simply given to the buyer by the seller when the transaction was completed. There were no brokers or specialists and no commissions were charged.

Trading was prompted on the basis of the financial data which is made available to each of the business game companies following each quarterly decision period under the Executive Game format. This financial data was widely publicized.

All funds invested were returned in the form of liquidating cash dividends to final stockholders at the end of the playing of the game (approximately 12 decision periods). The liquidating values were determined by the total earnings of the companies and their standing regarding discounted rate of return. In this particular instance, one half of the total liquidating fund was allocated to the final stockholders on the basis of each company's share of the total industry profit. The remaining half was allocated to the stockholders of the four companies with the highest discounted rate of return on owners' equity. The first place company received 40% of this fund; second place, 30%; third place, 20%; and fourth place, 10%. See Table 1 for an example of these calculations. Liquidating cash dividends could be paid in any other manner which is judged to be equitable, however.

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<sup>2</sup> In this particular study real money was used, although this need not be the case.

<sup>3</sup> Insiders are students who buy or sell stock in their own business game teams.

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TABLE 1

### Cash Liquidating Dividend Calculations

Assume 1,000 shares of each company outstanding. Therefore, the total stock fund would be \$1,000. Fifty percent is \$500.

Company	One-half of fund divided on basis of net profits			Rank	One half of fund divided on basis of discounted rate of return			Total Fund Distribution	
	Profit*	%	Cash		Rate	%	Cash	Total Cash	Cash per Share
1	\$ 800	10	% \$ 50	6	7.3%	-	\$ -	\$ 50	5.0¢
2	1,200	15	75	3	8.5	20%	100	175	17.5
3	2,000	25	125	1	9.2	40	200	325	32.5
4	400	5	25	7	7.2	-	-	25	2.5
5	-	-	-	8	0.0	-	-	-	-
6	1,600	20	100	2	8.8	30	150	250	25.0
7	-	-	-	9	-	-	-	-	-
8	800	10	50	5	8.0	-	-	50	5.0
9	1,200	15	75	4	8.2	10	50	125	12.5
<b>Total</b>	<b>\$8,000</b>	<b>100</b>	<b>\$500</b>			<b>100%</b>	<b>\$500</b>	<b>\$1,000</b>	<b>\$1.00</b>
		%							

\*In thousands

### ANALYSIS OF QUESTIONNAIRE RESPONSES

To test the effectiveness of the simulated stock exchange in bringing about “real world” understanding and reinforcing business game learning, students in the course were given a questionnaire containing seventeen questions. They were asked to answer each question by selecting a whole number on a one-to-five scale to represent their beliefs. The interpretation of the numbers on the scale is as follows:

- 1: of practically no relevance or importance
- 2: of below average relevance or importance
- 3: of average relevance or importance
- 4: of above average relevance or importance
- 5: of great relevance or importance

The questions which the students were asked to answer are shown in Figure 2.

FIGURE 2

#### Questionnaire

1. The Business Game helps in understanding the problems of business executives in the “real world.”
2. The simulated stock exchange helps in understanding the “real world” relationships between stockholders and directors.

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FIGURE 2 (continued)

3. To what degree were your business game participation and decisions influenced by the expected effect on your grade in the course?
4. To what degree did the feelings and attitudes of team members toward you affect your business game participation and decisions?
5. To what degree did the simulated stock exchange affect your business game participation and decisions?
6. To what degree would you think about responsibility to your company's external stockholders when making real business decisions?
7. Of what importance to you would be the forecasted near-term economic conditions in making real business decisions?
8. Of what importance to you would be the market price of a company's stock in making real business decisions?
9. Of what importance to you would be competitors' expected actions in making real business decisions?
10. To what degree did the business game improve your ability to work with other people?
11. To what degree did the simulated stock exchange help you understand the relationship between company performance and stock market values?
12. To what degree did the competitive atmosphere of the business game aid you in learning to make better business decisions?
13. To what extent did the simulated stock exchange improve your business game motivation?
14. To what extent did the simulated stock exchange increase your understanding of stock market functions and activities?
15. To what degree did the business game increase your enjoyment of the course?
16. To what degree did the simulated stock exchange contribute to your understanding of the need to regulate stock trading and the disclosure of corporate financial data?
17. How much did the business game stimulate your interest in developing business-decision skills?

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The student responses to the questionnaire are shown in Table 2. The responses are divided into two categories: (1) Those given by students who bought stock on the simulated stock exchange; (2) Those given by students who did not buy stock on the simulated stock exchange.

TABLE 2  
Questionnaire Responses

Question Number	Students Buying Stock					Students Not Buying Stock				
	1	2	3	4	5	1	2	3	4	5
1	1	4	7	16	4	9	32	62	45	15
2	7	10	4	9	2	24	25	33	27	2
3	3	3	8	7	10	14	19	41	38	46
4	5	2	12	5	8	14	19	56	51	22
5	5	3	10	4	10	87	7	11	4	1
6	6	4	5	11	6	14	15	35	58	28
7	1	1	4	14	12	0	4	29	69	58
8	3	3	11	12	3	8	21	51	51	24
9	1	0	2	11	18	1	1	10	51	98
10	8	2	15	4	3	19	15	80	39	8
11	1	4	14	10	3	66	15	17	11	0
12	3	5	8	8	8	18	22	41	58	23
13	3	4	8	9	8	82	10	14	3	0
14	11	2	10	5	4	79	14	14	2	0
15	2	4	0	10	16	17	18	32	53	40
16	1	3	14	8	6	72	13	15	9	1
17	1	6	6	11	8	14	17	47	60	22

The responses to the questions were analyzed by comparing the answers of those students who bought stock on the simulated stock exchange with those who did not by means of the chi-square test. In this way it was possible to show the effectiveness of the stock exchange in particular areas of interest. For seven of the seventeen questions, the patterns

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of responses were found to be significantly different.<sup>4</sup> The chi-square values for the seven questions are shown in Table 3. The particular relationships involved in these seven questions will be discussed briefly.

TABLE 3

Areas of Significance	
<u>Question Number</u>	<u>Chi-Square Value</u>
1	7.6
5	51.7
11	35.2
13	65.2
14	33.4
15	9.4
16	45.4

### Question 1

The responses indicated that participation<sup>5</sup> in the stock exchange resulted in significantly increased understanding of problems of business executives in the “real world” by way of more meaningful experiences in the business game.

### Question 5

Responses indicated that participation in the stock exchange favorably affected business game participation and decisions to a significant degree.

### Question 11

Participation in the stock exchange significantly improved understanding of the relationship between company performance and stock market values.

### Question 13

Participation in the stock exchange significantly improved business game motivation.

### Question 14

Participation in the stock exchange significantly increased the understanding of stock market functions and activities.

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<sup>4</sup> using the chi-square test and a level of significance of .05.

<sup>5</sup> Participation in the stock exchange is interpreted to mean that the student bought shares in one or more of the business game companies.

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### Question 15

Participation in the stock exchange led to significantly more enjoyment in the course through more meaningful experiences in the business game.

### Question 16

Participation in the stock exchange contributed significantly to the understanding of the need to regulate stock trading and the disclosure of corporate financial data.

For the remaining ten questions on the questionnaire, the difference in responses between those students who bought stock on the stock exchange and those who did not was not significantly different.

## CONCLUSIONS

This study has shown that there are major learning benefits to be derived when operating a simulated stock exchange in conjunction with a business game in a business policy course. Two of those benefits identified are: (1) Improvement and reinforcement in learning about the “real world” via the business game learning route as shown previously in Figure 1; (2) Increased understanding of stock market functions, activities, stock values, regulations, and appreciation for the value of corporate financial data.

The primary reasons for students buying stock on the stock exchange were the desire to take part in something that was novel, fun, and interesting, and the desire to make a profit since real money was used in this instance. Reasons for non-participation were lack of money and interest. The latter reason can possibly be overcome by increased publicity of stock market operations and through involvement of more students, perhaps those in business school courses other than business policy.