

# Developments in Business Simulation & Experiential Exercises, Volume 15, 1988

## SHOULD STUDENTS PLAY GAMES IN LABOR RELATIONS?

Barry S. Axe, Temple University

### ABSTRACT

The following represents an evaluation of the use of a computer assisted collective bargaining game and mock arbitration cases as pedagogic techniques in an undergraduate course in labor relations.

### INTRODUCTION

An experience is capable of generating and carrying any amount of theory (or intellectual content), but a theory apart from an experience cannot be definitely grasped even as a theory. (Dewey, 1916)

This quote from John Dewey, one of America's most noted educational philosophers, expresses what is perhaps the greatest intended advantage of experiential learning techniques notably games and simulations over more conventional lecture and discussion methods of pedagogy. Especially in business courses, the purpose of the simulation or business game is to permit students to gain "hands on" experience in an interaction setting not otherwise possible utilizing more conventional methods. Business games should signal effective performance by providing feedback and thus reinforcing decisions made by student-participants. This feedback often occurs in a very short time span, particularly when instructor assistance and computers are available. Thus, receiving the results so quickly after the student participants make the decisions, enables them to study results and make changes before decision considerations are forgotten. (Kolb, 1984).

Notwithstanding these expected benefits, in an often cited study of the teaching effectiveness of collegiate level business games, Greenlaw and Wyman (1973) reviewed 22 fairly rigorous studies. They found that little if anything was taught by utilization. In fact some professors have had difficulty determining which games are practical, realistic, at the proper level for particular students and yet scored in a manner which would keep the student's level of motivation high for the full period of time in which the game is used. Furthermore, business faculty who have only recently become familiar with simulation and gaming techniques are reluctant to try to incorporate them into their courses until their validity and reliability have been determined even as supplementary pedagogic techniques. (Schacter 1983).

Yet, in an update of the Greenlaw and Wyman study, Wolfe (1985) found that the gaining field has continued to grow. He cited evidence from the field's major sourcebook (Horn and Cleaver 1980). It listed 228 games compared with 209 games in a previous edition (Zuckerman and Horn, 1973).

Perhaps, each individual game must be evaluated after its use on its own merits based upon objectives and evaluation criteria which have been established for each prior to its selection and use. Once a data base has been established then the predictive validity and reliability of the game will be possible.

The purpose of this study, therefore, was to evaluate a specific business simulation in the functional area of labor

relations. Previous studies were used to establish a research design and empirical research was used to determine whether or not there were significant differences in student performance on examinations and attitudes when the game was used compared to when it was not used. This is especially important in a subject like labor relations where observation of actual negotiation is usually not possible.

The need for this type of evaluation has been suggested by Greenlaw and Wyman (1973), utilizing cost-benefit analysis. The costs of using games instead of an alternative pedagogy or other supplemental techniques should be determined in advance so that the most effective methods -are used. Some of these costs include opportunity costs which results from the necessity of alternative uses of people's time, computer time, and clerical costs. These expenses must be related to the values gained from games in terms of learning as measured by test performance and attitude changes compared to traditional lecture and discussion methods.

### REVIEW OF PERTINENT RESEARCH

The literature on management games reveals the need for more research on methodology and design in the appraisal of various games. As previously noted research was first reviewed by Greenlaw and Wyman (1973). In their 10-year study from 1961 to 1972, 22 studies were included. Excluded were any studies without fairly rigorous research designs or anecdotal or testimonial studies. Of the 22 studies included 13 or 59% were in business policy or general management. None were in collective bargaining. When Wolfe (1985) updated this study to cover the years 1973 to 1983 he found that the field doubled its annual production rate to 39 studies including a wider range of business areas and functional applications. Policy and top management games in this study represented 23 still 59% of those reported in the literature. Even by 1983 only 1 research study involving a collective bargaining functional application is reported. These studies were reviewed to determine findings and appropriate research design for the instant study. Only studies which analyze student performance and attitude changes are now cited:

Wolfe and Chacko (1983) randomly assigned 115 business policy students playing for 55% grade credit for one-to-four member teams. The results indicated that "three and four member teams increased their business policy knowledge the most (statistical significance was not determined). The groups indicated that their prime knowledge, the course lectures and cases were important sources for the solo firms. Two member teams cited lectures as equal to the game in importance. Three and four member teams said the game was more important.

Pearce (1979) compared games to cases by using the UCLA game for eight decision rounds. Learning was determined by scoring student essay-style, strategy statements over nine content areas. Although the case and game groups scored higher than a third control group, the case group outscored its game counterpart in three of the content areas.

Robinson (1978) compared the use of an unspecified economics game with the use of other teaching methods. The researcher concluded that the use of games were not uniformly superior to the use of case studies as a supplementary teaching device. Notably, there was no

## Developments in Business Simulation & Experiential Exercises, Volume 15, 1988

significant difference found on achievement tests at the .05 or .01 level of confidence. However, the study did indicate that the game created more student involvement and interest according to student attitude surveys.

Biggs (1978) revealed that the reliance of faculty on mechanically generated games scores can lead to questionable grading results. This provides a convincing argument for a free form game rather than a rigidly scored games to determine significance.

In investigating the impact of a functional game in collective bargaining on students in a course in labor relations, Roderick et. al., (1979) placed upper division undergraduate students in lecture or simulation groups after nine weeks of lecture-style preparation. For the remaining course time, two game groups simulated labor agreement negotiations (for 40% of course credits) and the control group pursued the same material via lectures. Although the study reports the findings in a game-supportive fashion, its actual results were quite surprising. The lecture group did not improve in any area. For the simulation group the "after" knowledge scores were lower (showing that the students knew less or were more confused than "before").

Finally, in the other study cited on the impact of a functional game in collective bargaining on students in a labor relations course, Brenenstuhl and Blalack (1976) found positive student attitude changes resulting from their negotiations. They also stated that additional research was needed to determine which intervening variables affect attitudes of students involved in the negotiations process.

In summary, these studies have indicated that there is no firm generalization between the use of games and changes in student performance and attitudes when they were used compared to when they were not. However, some of the studies have shown that intensive interest was developed by the use of the games. Therefore, as a result of this review it is concluded that only future research of the type suggested in the instant study, can objectively be used to determine the specific pedagogical value of a business game. Therefore, it is assumed that the individual games should be assessed in terms of their individual ability to accomplish individual goals. Consequently, a description and evaluation of a specific game will now follow.

### PROCEDURE

Two main methodologies have been employed in 2 sections of Business 4365, Labor Management Relations at a medium sized northeastern university.

#### Lecture and Discussion

The first half of the course was devoted to familiarizing all student participants in experimental and control groups with the "basics of Labor Management Relations. They read and answered questions for class discussion on such topics as (1) The Present Status of the Labor Management Relationship, (2) The History of the Union Movement in the U.S., (3) The Developing Labor Law, (4) The Structure of the Labor Management Relationship, (5) Principles of Collective Bargaining and (6) Contract Administration. After each lecture the students discuss written answers to questions given to them by the professor in advance of each lecture. All sixty students were then tested utilizing a fifty question multiple choice and five essay question test. The multiple choice questions were taken from an author prepared test

bank validated by the author. Questions were based upon lecture topics. The essay questions came from among the discussion questions described above. Students were also asked to investigate an actual union management relationship which was worth extra credit on the first test grade. Test results were then computer graded using an item analysis to test for validity and reliability. This process was repeated for the control group as explained above.

Also arbitration case presentations were conducted in conjunction with the subject matter lectures and discussions. This heightened the student's awareness of positional strong and weak points of both union and management contract language on these issues. Finally, these cases were intended to provide the student/participants with insights into their own behavior and that of other students in adversarial situations.

#### Collective Bargaining Game

The purpose of this comprehensive case was to acquaint the student/participants with the process of renegotiation of a labor contract. Students were familiarized with the techniques of negotiations through chapters in the Sloan and Witnev (1985) text and the Bargaining Outline for Management (Gerr 1972). The Collective Bargaining Issues were discussed in Chapters 7 through 10 of the text. These topics were Wages, Benefits, Institutional and Administrative Issues.

Participants were provided with information about the historical background of the company, consolidated financial statements and a labor agreement which was about to expire.

The background material stated that the company, an auto parts manufacturer, has two plants only one of which is organized. Within the past contract period there has been substantial worker agitation regarding job security, production standards, union security and work assignments. Also, the unorganized plant is located in a "right-to-work" law state. This plant was involved in several unsuccessful union organizing drives. This provided the management team with leverage by providing it with the flexibility of shifting work to the Louisiana plant if necessary during a strike situation. The procedures prior to negotiation were:

1. The experiment group class was divided into labor and management teams with not more than four members on each team. Each team was required to agree upon at least four hours per week to spend outside of class preparing for the negotiations.
2. Each team was expected to establish not more than eight or less than six proposals that it will demand. All demands must be based upon information in the problem.
3. For purposes of the problem all wage and benefit items were considered as one economic demand. Each team was to strive to negotiate demands that it believed to be most important. This meant that the team members had to reach consensus which required weighting of alternative demands in light of the respective needs of the labor or management group that the team was representing.
4. Compromises, counterproposals, trading, package proposals and the dropping of demands to secure a contract were all permitted in light of the give and

## Developments in Business Simulation & Experiential Exercises, Volume 15, 1988

take of the actual negotiations.

5. Team chairpersons were required to coordinate the planning of each team, gain agreement on the meeting times and the places for planning meetings, and assign work to be done by members of the team. Each team member was assigned to a major topic area. Unlike actual negotiations, the chief spokesman for each was the person who prepared that topic. This was intended to maximize the learning situation of each team member. The parties signed ground rules which specified these requirements.

6. There was to be a settlement of all issues through negotiation or a work stoppage. Only one extension (until the next to the last class) was permitted.

7. The time of the negotiation was the present and accordingly, the parties were conditioned by current elements of economic trends, patterns of collective bargaining and labor laws.

8. The computer was used to facilitate the negotiations process. Students used it to cost out proposals and look at their effect on financial statements (Income Statement and Balance Sheet). The computer was intended to substantially speed up the costing of the proposals and was the most effective means of accurately estimating the costs of economic proposals. The students needed no previous knowledge of computers. The program was "user friendly." When students reached agreement, the computer printed the economic and non-economic proposals in rank order agreed to, together with a total contract cost. The instructor can evaluate each agreement and grade student performance accordingly. Also, requiring students to complete preprinted forms helped them to better prepare for negotiations and produce a better final agreement. All supporting documentation and computer runs were to be included with other data during a two hour debriefing session.

### Information to be Submitted Prior to Negotiations

Prior to the start of negotiations each negotiating team was required to submit its targets, compromise possibilities and bottom line positions to the instructor. This submission was final and could not be changed during the course of the negotiations. Once these subjects were set, the specificity of team and individual goals permitted a continuity of strategic and tactical considerations. Students were also asked to document their rationale with footnotes from research sources. The assessment of each individual students skills was based on a comparison of these objectives with their final results, and the costs associated with these proposals.

### Roles of Instructor

The instructor served three functional roles during the negotiations:

#### 1. Planning and Control Role of Instructor

The instructor insured that planning and that text ideas were implemented during the negotiations. Initial proposals, fall back and bottom line positions were submitted by each team. A critique by the instructor followed each of the early sessions and consisted of an evaluation of strategy, tactics and techniques. This was very helpful for strategy development for later sessions. (The instructor should never suggest changing tactics, i.e. counter proposals, trades, tabling, package, bargaining, etc. He should only require establishment of priorities,

sequences, and rationale for each proposal).

#### 2\_ Mediating/Judicial Role of Instructor

If the parties reach impasses in the later stages of negotiations, the instructor was utilized to bring the parties together. Also, if either party charged the other with an unfair labor practice during negotiations, the instructor could use an NLRB hearing examiner. Team grades are usually not affected by such intervention. However, failure to comply with rules could result in lowering of the grade of an individual or the entire group. Also, the fact that the deadline was approaching usually forced concessions by one side or the other and often resulted in demands being dropped. (It may also be possible to utilize guests who are actually involved in labor negotiations i.e. F.M.C.S. commissioners, union or management representatives co resolve negotiation impasses.)

#### 3, Approval and Debriefing Role

Upon contract expiration at the deadline, all members of the class met in one room for a debriefing and wrap up session. Each team chairperson reported on terms of the settlement which were ratified with signatures of all team members. If there were not any settlement and strikes resulted, students must explain what issues were at impasse and why a settlement could not be reached. This exchange, together with a (1) discussion by team members who were responsible on opposing sides for each topic and (2) the rationale and cost figures each used to decide to settle or impasse, should both be extremely beneficial in evaluating results. Each student then was required to submit a written paper summarizing results. An analysis of the results of each of these individual papers, test performance and student attitude surveys tested the basis of the major hypothesis of this paper:

The increased perspectives gained by student participants by the collective bargaining game and arbitration exercises should have led to:

(1) improved attitudes toward labor management relationships and (2) better test performance than solely the use of lecture and discussion techniques.

### FINDINGS

A total of 60 students all of whom completed between 100 and 112 credits in two sections were given the first examination of 50 multiple choice and five essay questions after completion of lecture and discussion exercises in the first half of the course. The second exam which also contained 50 multiple choice question and five list type essay questions was administered after the last week of the semester to both groups. Attitude surveys were also administered during the beginning of the class after each examination to both groups. The results of the examinations and comparisons of eight and sixteen week attitude surveys are discussed and shown on Tables 1, 2, and 3 below:

Hypothesis I stated that there is no significant difference in students' performance on the two tests in either the experimental or control group.

The first of these tests was given to both experimental and control groups after the first half of the course and was based solely on the lectures. The second test was also given to both groups after the experimental group completed the three arbitration case presentations and the negotiations game. The control group continued to receive lectures on how to negotiate and

## Developments in Business Simulation & Experiential Exercises, Volume 15, 1988

arbitrate disputes concerning contract language as well as negotiation tactics on specific economic, administrative and institutional issues. To test for a significant difference in Hypothesis I between student performance on both examinations a "t" test was utilized and applied to the following formula:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{S \text{ diff}} \quad \text{where } S \text{ diff} = \sqrt{\frac{s_1}{N_1} + \frac{s_2}{N_2}}$$

A difference between the group mean scores large enough to produce a t-test statistic of 1.96 or greater was considered significant at the .05 level of confidence ( $P > .05$ ) and thus would result in rejection of the null hypothesis stated above.

In this experiment, as shown by the results below, the multiple choice and essay examinations were administered and scored, at the conclusion of the first half of the course. It was based on lecture and reading assignments. The final examination was given at the conclusion of the second half of the course. It was based on lecture, discussion with the control group and lecture discussion and arbitration case problems and the Sloan and Witney collective bargaining game with the experimental group. The results of these two tests were then compared. It was found that the mean average score for the entire group of thirty students was not significantly higher on the second test for the experimental group (80.5) administered at the conclusions of the arbitration cases and negotiations game than it was on the first test (70.0) based solely on lecture and discussion questions for both experimental and control groups. Also, the mean second test score of the control group, who all participated in lecture and discussion, but not in the negotiations, was five points lower than the scores of the experimental group. These results are shown below.

TABLE I  
Comparison of Mean Test Scores Before and After Game

	Control Group Mean	Experimental Group Mean	Standard Deviation Control Group	Standard Deviation Experimental Group
Test 1	72.0	70.0	4.5	5.1
Test 2	75.0	80.5	3.9	4.2

The improvement in test scores occurred on over 70% of the grades of these students which was a significant number of students. (Even though the group mean score was not.) The t-test for paired data revealed a t of 6.05.

In March 1987, at the conclusion of the first examination and May 1987, at the conclusion of the final examination, the student attitude survey (Student Evaluation Form) was also administered to the same 60 students. One section was the control group and one was the experimental group. Included with each questionnaire were instructions explaining its purposes and the directions for completing it. A Likert scaling weight was given to each adjective rating determination for each factor in the rating as follows:

5	4	3	2	1
Outstanding	Good	Satisfactory	Marginal	Poor

The total number of responses for each of the five categories (frequencies) was then tallied. All scale values were based upon a frequency of responses for each of the criteria listed in the Student Attitude Survey. Students were instructed to rate both the instructor and the course in terms of criteria shown on the form below. Students were urged to be candid in their appraisals. After students completed the forms they were returned anonymously and placed by the respondents in a sealed envelope for tabulation. Results obtained through the use of the Likert scaling techniques previously discussed yielded both responses to the individual items and a distribution of scores that are shown in summary form below:

TABLE II  
Bus. 4365 Student Evaluation

### Evaluation of Course

	Exper. Control Test I		Exper. Control Test II	
-Course impact on student knowledge of labor relations	4.0	3.0	4.3	3.8
-Value of text and other lecture notes	3.7	3.8	4.4	3.5
-Value of negotiations on understanding of labor relations concepts	3.8	3.7	4.8	3.8
-Overall course evaluation; course met objectives stated on syllabus	3.9	3.9	4.4	3.9
-Other comments				

### RESULTS

If the findings in the review of the literature regarding the use of games were correct, then the student scores should not be significantly different when comparing the first test when lecture and discussion were the primary pedagogical techniques and the second test where the arbitration exercises and the negotiations games were the primary pedagogical tool for the experimental group. As can be seen by a comparison of student scores in the two tests as shown in Table II, Hypothesis I has been proven to be partially incorrect.

When students participated in the arbitration cases and the collective bargaining game, a significantly higher number of students achieved higher scores. However, these scores were not significant. Also a significant number reacted in a more favorable manner than they did by solely utilizing the lecture and discussion methods. A comparison of the results of these two surveys is shown above.

This supports the findings of previous research by all of whom reported that business games create more student involvement and interest than case studies and therefore contribute to a more favorable attitude toward course content. Previous findings were fully supported when examining test results in both tests. (See Table II)

# Developments in Business Simulation & Experiential Exercises, Volume 15, 1988

## SUMMARY AND CONCLUSIONS

1. No firm generalization can be made between the comparative value of the lectures and discussion approach and the use of games with respect to student performance, in the Labor Relations course.
2. However, student attitudes did seem to uniformly show that the game did result in improved attitudes when the game and simulated bargaining exercises were compared to lecture and discussion techniques between experimental and control groups. It was an intensely valuable learning experience for most students as revealed by a combination of test results and attitude surveys. However, learning could only be inferred in the literature from student reactions to interpersonal interactions with other players. Thus, it has been inferred that the attitudes of students and type of learning varies with success or failure of the individual teams, based on job assignments of members and the fact that an experiential game was used rather than whether or not a specific game was used.
3. Even though this study has not indicated that there is a significant relationship between the use of business games and improvement of student performance, this particular experiment did reveal better test scores and improved attitudes for a significant number of students in the control group after the game was used. Also, although not statistically significant, the author received many comments from students. Most were favorable) stating that their involvement in this negotiation exercise has resulted in their increased appreciation of concepts such as the effect of negotiations on labor costs and profits; cost benefits analysis in proposals; the importance of teamwork, compromises and deadlines.

## REFERENCES

- Biggs, W.D., "A Comparison of Ranking and Relational Grading Procedures in A General Management Simulation," Simulation and Games, June 1978, p. 198.
- Brenenstuhl, Daniel C. and Richard Blalack, "Role Preference and Vested Interest in a Bargaining Environment," Simulation and Games, March 1978, p.64.
- Brenner, L. and Kratz, J. "The Evolution of PLATO Instructional Simulations," U.S. Department of Health, Education & Welfare, 1981, p. 10.
- Cohen, K., A. Deckman, and P. O'Mara, Carnegie Tech Management Game: An Experiment in Business Education, (Homewood, IL: Richard Irwin), 1964, p. 248.
- Dewey, John, Democracy and Education, New York: The Macmillan Co., 1916, p. 159.
- Government Employee Relations Report. Bargaining Outlines for Management RF 110858, Bureau of National Affairs, Nov. 1972.
- Greenlaw, P.S. and F.P. Wyman, "The Teaching Effectiveness of Games in Collegiate Business Courses," Simulation and Games, September 1973, p. 259-294.
- Horn, R.E. and Cleaves A., The Guide to Simulations/ Games for Education and Training, Beverly Hills, California: Sage, 1980.
- Kolb, D.A., Experimental Learning, Prentice Hall, Englewood Cliffs, N.J.: Prentice Hall, 1984, p. 36-40.
- Pearce, J.A., "Developing Business Policy Skills: A Report on Alternatives," Journal of Educational Technology, July 1979, pps. 361-371.
- Robinson, J.N., "Are Economic Games and Simulations Useful," Simulation and Games, March 1978, p.<sup>3</sup>.
- Roderick, R.D., Welterding, J.A., and Eldredge, D., "Simulation as a Techniques for Teaching Collective Bargaining," Proceedings of the Sixth National ABSEL Conference, New Orleans: Tempe, Arizona State University: pps. 56-59.
- Schachter, H.L. , Simulations for Training and Assessment: The Problem of Relevance to the World. Public Personnel Management, vol. 9, Sept. 1983, pps. 225-227.
- Wolfe, Joseph, The Teaching Effectiveness Of Games in Collegiate Business Courses, A 1973-83 Update Simulation and Games, September 1985, pps. 251-88.
- Zuckerman, and Horn, R.R., The Guide to Simulations/Games for Education and Training, Lexington, Mass.: Informational Resources, 1973.