

Insights into Experiential Pedagogy, Volume 6, 1979

COMPARING PERFORMANCE DURING THREE MANAGERIAL ACCOUNTING SIMULATION SCHEDULES

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ABSTRACT

This study extends a previous study which showed that simulation administrators and the academic preparation of participants had no significant effect on simulation performance. This research shows that the scheduling, time intervals, or intervening education had no significant effect on simulation performance. Seventy undergraduate students of cost accounting performed the V.K. Gadget Company Managerial Accounting simulation during three different class schedules and did not perform significantly different. The scheduling problem was extended to planning an optimal schedule for an Industrial training setting which may be reported at the ABSEL conference in April, 1979.

INTRODUCTION

Objective

The purpose of this study is to determine quantitatively whether it is more beneficial to begin simulation at the beginning of a course and provide lectures and discussions to improve decision-making during the simulation or to have lectures and discussions before beginning to manage a simulated business with shorter decision intervals.

The Problem

There are two manifestations of the same problem. The problem is in the optimal scheduling of managerial accounting simulations. The two manifestations are: (1) training problem in an organization, and (2) scheduling the use of managerial accounting simulations in a university.

THE CORPORATE TRAINING PROBLEM

A corporation with many geographically dispersed facilities which has a strict internal promotion policy wants to train technically successful managers in "accounting Insights." Basically, they are concerned with the effect of their transactions on the financial statements. The corporation has tried using guest speakers, course books, and both video and audio tapes. Managerial training has been tried both with correspondence materials mailed to each of the facilities and with centralized classes conducted at the home office. All of these attempts have fallen short of the goal because of the undesirability of the detail necessary to "work through all of the computations to see the financial statement impact of decisions. The opportunity cost of training a large number of managers requires a

maximum of efficiency and effectiveness in instilling the insights which can be gained only by the performance of a managerial accounting simulation. A computer business simulation would perform the calculations and prepare mathematically correct statements with a minimum of student effort. The problem is that we do not know whether it would be better to conduct the simulations before, during, or after the lectures or classes.

Alternative One

Simulation instruction books could be mailed to each branch manager trainee, ample time could be allowed for study, and then the trainees could be transported to a common computer facility for a series of simulations to be conducted during one training day.

Alternative Two

Simulation instruction books could be mailed to each branch manager trainee, and the trainees could mail their decisions back to the central computer facility.

Alternative Three

Any combination of the first two alternatives could be implemented since they represent opposite poles of a continuum. That is, some of the decisions could be mailed in and the results mailed back to the trainees to allow learning time for the rules and administrative procedures and experimentation with various interaction effects.

Discussion

Thirteen annual computer simulation management competitions have been conducted by the St. Paul, Minnesota chapter of the National Accounting Association at the St. Paul headquarters of 3M corporation. Instruction booklets are mailed to the thirteen competing business colleges in Minnesota and Wisconsin two weeks before the teams assemble for competition day. (Incidentally, Winona State University won both first and second place in 1978 which adds objective credibility to the use of progressively complex simulations for accounting education as indicated in last year's research.)

The marketing simulation competitors perform five decisions by mail before gathering in Madison, Wisconsin for their final competition which seems to allow more time for game familiarity prior to competition.

Insights into Experiential Pedagogy, Volume 6, 1979

Since many alternatives have been used by academia, it should be possible to determine the most effective schedule for corporate training by experimenting with alternative academic schedules.

THE ACADEMIC SCHEDULING PROBLEM

Students have complained that insufficient time was allowed to learn how to manage their company simulation when the first decision was due two weeks after the course began. Therefore, the schedule was changed to require the first decision concurrent with the mid-term exam five weeks into the quarter. With a ten- week quarter, that only

TABLE SHOWING TIMING OF 8 DECISIONS

Weeks	1	2	3	4	5	6	7	8	9	10
Decisions throughout 10-week quarter (Fall 1977)			1	2	3	4	5	6	7	8
Decisions throughout 5-week session (Summer 1978)	1	2	3	4	5	6	7	8		
Lectures First 10-week quarter (Fall 1973)						1	2	3	4	5

allows one week for the second decision and half of a week thereafter as shown below:

The numbers within the table represent the decision number and their horizontal position along the time line indicates their due date.

REVIEW OF RELEVANT LITERATURE

The president of a training, consulting, and publishing firm for nonschool education who is also research associate to the Dean at the University of Michigan's School of Education [3] wrote authoritatively from his experience, "The rules and procedures for gaming simulation are often complex. Thus game users often feel compelled to give a long, comprehensive Introduction to users before the start of play. This is usually a mistake. Generally, players should be given only enough information to start playing; then, in the process of playing, asking questions, making mistakes, and reading the player's manual, they will find out how the game works. In that the rules and processes of the game are its 'content,' to present everything verbally is to negate one of the basic reasons for playing the game. Obviously, enough information should be given so that the level of player confusion does not hinder learning.' No mention is made of performance differences with alternative schedules but it seems reasonable to presume that alternatives have been tried before determining this optimal implementation strategy.

In 1978, Walker [7] showed that the administrator of a simulation

and the number and content of managerial accounting courses prior to the simulation did not significantly effect the performance on a simulation unless there was a simulation in a prior course. In other words, simulation performance could be improved only by simulation participation. At the same convention, (ABSEL Denver 1978) a study by Badgett, Brenenstuhl and Marshall El] analyzed: (1) Maturity, (2) Motivation, (3) Social background, (4) performance on ability tests, and (5) performance on tests from the class material. They found no significant influence on the performance of participants in a business simulation.

The appropriateness of a simulation for solving the current problem is affirmed with Churchill's experience in Georgia [2]. The Georgia State University Executive Management Seminar is a one-week course for middle managers that has been operating since the 1950's and using a simulation game for the basic fabric since 1971. Simulations are used to reduce the amount of routine work the player is faced with and enable the development of managerial thought. The fact that the course which had many years to try and then implement optimal methods has used simulations for training for over eight years provides evidence of their perceived appropriateness and effectiveness

DESCRIPTION OF THE RESEARCH

Scope

This study uses both the V.K. Gadget Company t4] and the Executive Simulation C5] and compares the class mean and standard deviation in the final period of simulation. All of the students are undergraduate cost accounting students at Winona State University and the results are for the 1977 and 1978 academic years.

Methodology

The data are collected from the last period of simulation after the course grades have been turned in and therefore they are unbiased and objective. The data were analyzed with the Statistical Package for the Social Sciences (SPSS) C6) and many tests were performed. Only the most significant data are summarized in this report.

Limitations

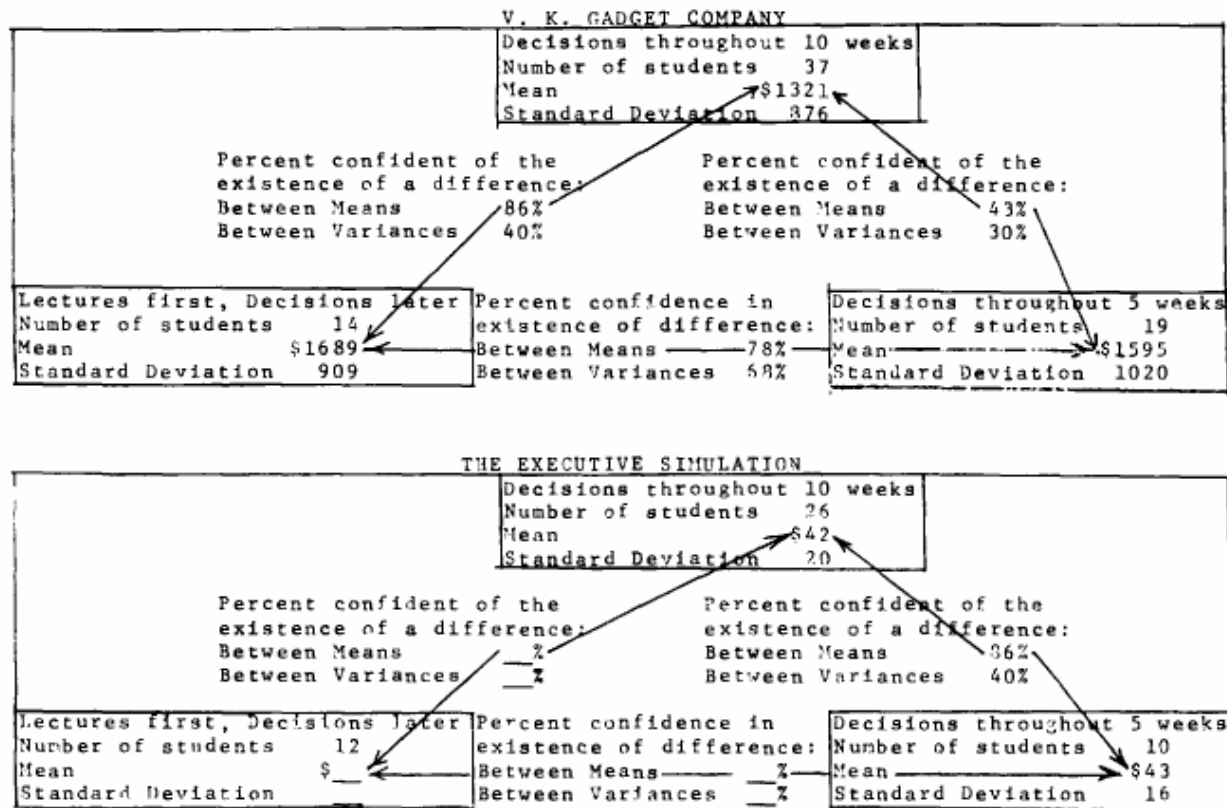
The objective for measurement is the stock price in the final period of play. Even though the stock price may not be the optimal goal for a corporation, it was the stated objective for each of the students who participated. Therefore, the ability of the student to manage a simulated firm i9 appropriately measured.

Findings

The findings are presented on a cluster chart to show the percentage of confidence in the differences between the means and the standard deviations of the different classes.

Insights into Experiential Pedagogy, Volume 6, 1979

FINDINGS



NOTE: THE MISSING DATA FOR THE BLANKS WILL BE AVAILABLE AT THE CONFERENCE IN NEW ORLEANS.

Comments

While a trend of growth appears with improved scheduling, none of the differences are significant at the 14% level and statistical inference would reject any hypothesis that there is any difference between the results from varying the schedules. An accounting analysis in dollars would show a gain of \$1689-1321 or 28% improvement of \$368 due to rescheduling while financial analysis would say the risk increased \$909-876 or 4% which is \$33. Account analysis would prefer studying before making decisions.

The subjective factors of student satisfaction were higher when students had a chance to become accustomed to the idea of a simulation over a longer period of time. It may be that some behavioral factors of acceptance are playing a larger role in distorting the findings. It is also possible that the accounting professor is improving in his ability to prepare students for simulation. And finally, students may be acquiring skills via the grapevine from earlier students that cause improved performance.

CONCLUSION

There is no significant statistical difference in performance on accounting simulations whether they are begun immediately and continued throughout a course or begun after essential

material is covered.

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Insights into Experiential Pedagogy, Volume 6, 1979

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