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MANAGEMENT SIMULATION AS A TOOL FOR TRAINING AND TEACHING

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The authors designed a management simulation program to improve the development of decision-making skills.

INTRODUCTION

A simulation is an instructional technique in which the participant makes decisions and gains experience and knowledge imbedded in the exercise. The game model interacts between the simulated environment and the activity of the participants. Games developed for management simulation make a valuable contribution to the development of decision-making skills. This type of exercise provides wide experience in a short period of time at minimal cost. We discerned a need to improve classroom instruction of Agribusiness courses and in Agribusiness Training Programs. A review of the literature regarding simulation programs available, we could not find such an agribusiness

simulation on the market. Thus we developed SIMAG to fill the void.

SIMAG was designed to provide classroom instruction for Agribusiness courses and Agribusiness Training Programs. We were fortunate to assemble a team that enjoyed the expertise and background as well as the interest to create the program. The game is oriented to the practice of skills necessary for the agribusiness retail industry and SIMAG complements such other learning activity and learning resources that may be available.

OBJECTIVES

1. To provide an application of classroom knowledge in managing an agribusiness firm:
 - a. making store policy and operation decisions.

- b. analyzing and solving managerial problems in a real world situation.
2. To increase student comprehension of managerial techniques through application and practice.
3. To allow students to experience the consequences of their decisions by reviewing store performance during and after the management period.
4. To provide opportunities for students to critique their performance in the management period as a means of further understanding management techniques.
5. To allow students to compare their progress with that of their classmates.

PROCEDURES

SIMAG utilizes Control Data Corporation's PLATO (Program Logic for Automated Teaching Operations) system. PLATO is an interactive computer-assisted instruction technique and offers rapid response. The system has the ability to allow the student to interact with the system on an individual progress basis. The graphic capabilities of display and the ease of use and updating the program are additional PLATO advantages. PLATO is dedicated to educational activity and allows for an interesting game with the effective use of the instructor's time. The simulation has been designed for various levels of sophistication to enhance its versatility.

SIMAG encourages the trainee to make business decisions concerning an agribusiness retail company. During the game, the student solves a series of problems occurring in the store. The nature of the situations vary in that they involve labor relations, pricing, competition and changes in store policy. The results of the decisions affect store performance and the student is evaluated accordingly. Data available to the student include financial history, payroll (including individual

salaries), sales, inventory and other pertinent information concerning an agribusiness firm.

SIMAG may be adapted to most computer systems. Microcomputers (Apple, Commodore, Radio Shack, IBM, etc.) beseech the opportunity to give instruction in an individualized progress mode with interesting, challenging and motivating formats.

BENEFITS DERIVED FROM SIMAG

1. The participant may gain experience without the trauma of accompanying expensive errors and embarrassment.
2. This technique provides individualized instruction in a specialized area. In the utilization of this technique, trainees may progress as they gain the competencies indicated in the program. This may be contrasted with progress measured by elapsed time in the traditional classroom milieu.
3. Any number of trainees become feasible using this technique. One individual may be offered the opportunity, whereas in the conventional classroom, a minimum number of students is usually a prerequisite.
4. Computer-assisted instruction provides for programs to commence with the needs of one student and the availability of computer time. The program may continue with the same two constraints, i.e., student need and computer availability.
5. The programs, as well as portions of the program, may be pursued whenever the need is indicated.
6. The simulation may be enhanced with experience and with changing circumstances.
7. There will be an assurance of a uniform presentation in the use of this technique. The content of the pro-

gram will be presented exactly according to predetermined criteria.

8. The trainee will gain a wide range of experience within a short period of time. Also, the student is spared the "embarrassment" of mistakes in a conventional classroom mode.
9. Computer-assisted instruction may be offered at the convenience of management as well as the student. Instruction is not impaired because of illness, lateness, absences, fatigue, heterogeneous student mix, as well as the common student discipline problems. Classroom activities such as roll taking, announcements, fund drives, and fire drills are eliminated.
10. The material may be presented to students as initially determined without instructor biases.

Instruction in this manner is improved because the PLATO simulation permits students to have real-life management experiences and the exercise is an intertwining of computers with traditional instructional techniques.

A schedule of the interaction of the several components of SIMAG is depicted in Figure 1. It is significant to observe that each of the facets are intertwining and these are necessary to the success of this technique. The trainee will inter-

face with SIMAG, store manager, instructor, as well as real-life situations. The dynamics involved in the exercise cause the acquisition of the described decision-making skills.

DESCRIPTION OF THE PROGRAM

This lesson consists of two phases, and the student is free to choose which phase he or she wishes to start with. If this is the student's first time in the lesson, it is suggested that he or she start with Phase I.

The accompanying flow charts should be examined in detail, Figures 2 and 3. The system allows the trainee a great deal of flexibility. The user may begin activity at any point, dependent upon individual background, level of confidence and the specific need at the time of instruction.

There are several types of assistance available throughout the exercise. Trainee is encouraged to seek advice from district manager as well as the help offered by PLATO.

Phase I

The initial phase of this simulation describes the management functions. It also details the management objectives and the importance of setting objectives. The simulation describes each management

FIGURE 1. INTERACTION OF PARTICIPANTS

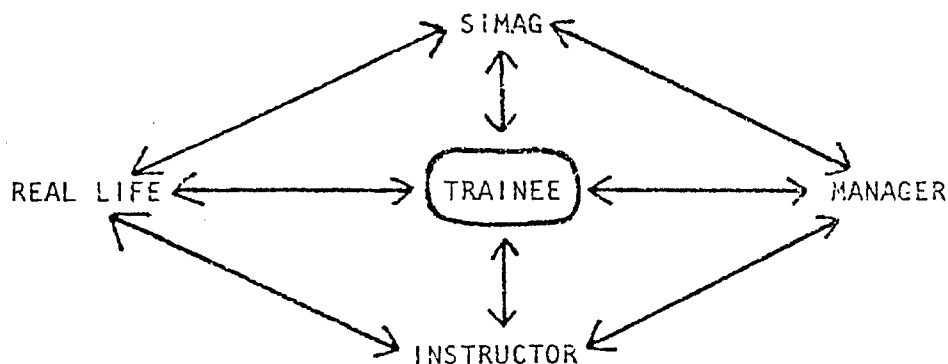


FIGURE 2. PHASE I OF SIMAG PROGRAM

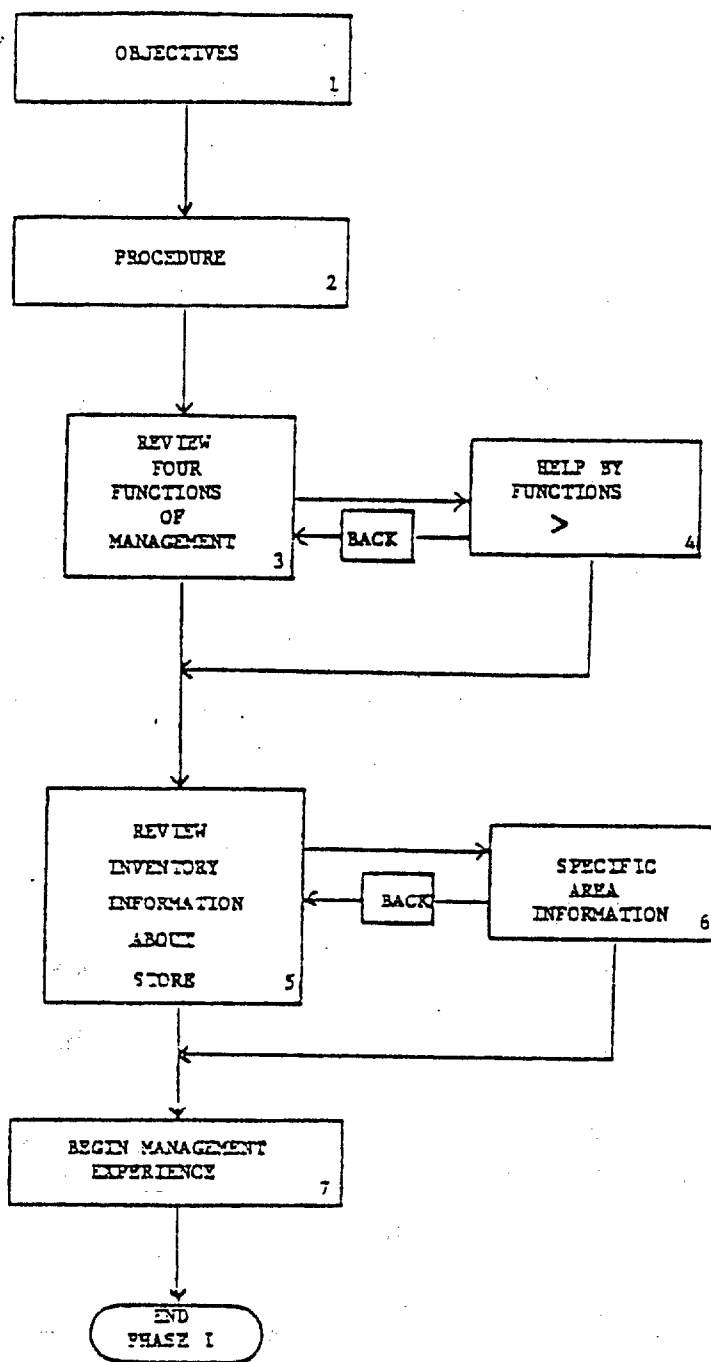
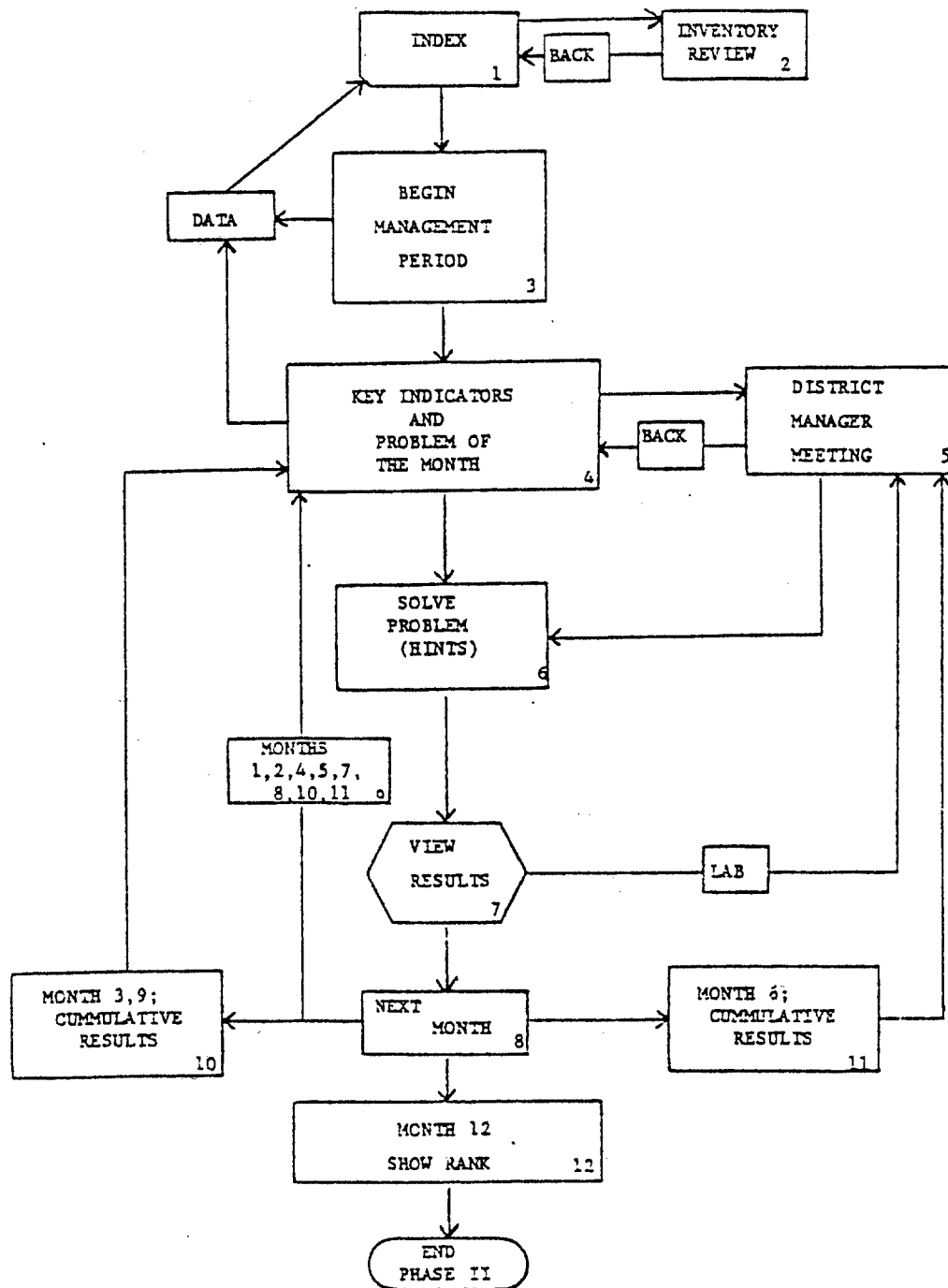


FIGURE 11. PHASE II OF SIMAG PROGRAM



function in detail. The trainee enjoys access to all of these aspects during the exercise. The student may use this capability to initially become familiar with the material. During the simulation, these materials may be accessed for review. We have listed below the details of the data contained within the program.

Financial Inventory Index

1. Organizational Structure
2. Statement of Operations
3. Key Indicators
4. Inventory Valuation
5. Income and Margins
6. Changes in Inventory
7. Balance Sheet
8. Labor Summary

Statement of Operations

1. Margins and Revenue
2. Expenses
3. Margins and Revenue Comparison
4. Year to Date

Balance Sheet

1. Condensed Balance Sheet
2. Assets and Investments
3. Property, Plant, and Equipment
4. Liabilities
5. Savings and Equities

Phase II: Management Simulation

This phase of the lesson is divided into six segments. The first three deal with specific areas of the store in which management problems may arise.

Segment four allows you to be the manager of that store for a full year (nine management periods), during which a variety of problems from Segments 1, 2, and 3 will arise. Your goal will be to solve these problems while maintaining and strengthening the key indicators and profit/loss standing of the store.

Segment five allows the student to examine a one year summary of store data,

as would a newly hired manager. This segment provides essay type questions in which you discuss how situations could have been more successfully handled or avoided.

Finally, segment six allows you to again simulate a full year of the store, and, based on your experiences in segments one to five, handle more complex problems than in segment four.

Phase II Index

- 1) PERSONNEL PROBLEMS
Estimated duration: 30-40 minutes
- 2) ADVERTISING AND COMPETITION PROBLEMS
Estimated duration: 30-40 minutes
- 3) MERCHANDISING AND INVENTORY PROBLEMS
Estimated duration: 30-40 minutes
- 4) SIMULATION I
Estimated duration: 50-60 minutes
- 5) ANALYSIS AND RECOMMENDATIONS
Estimated duration: 50-60 minutes
- 6) SIMULATION II
Estimated duration: 50-60 minutes

SAMPLE PROBLEM FOR STUDENT CONSIDERATION

Through your operational supervisor, the regional manager has informed you that maximum 8 percent merit raises are available for full-time personnel in your store. As manager, you must determine the level of the pay raises for your employees. Several options are available to you. Justify your decision on the pay raise for each employee.

Options

1. Grant the maximum 8 percent merit raise to all personnel.
2. Withhold the raise.
3. Review current employee performance evaluations and award proportionally.

SUMMARY AND CONCLUSIONS

The simulation process and program described in this paper has many advantages as a training and teaching tool. These are: 1) it is both a teaching and training tool, 2) efficiency, 3) immediate feedback, 4) convenience, 5) educational and interesting, and 6) is not passive.

For this simulation to be effective, the implementation should be as described in this article. The interplay of the trainee with the SIMAG, manager, instructor, and intertwined with real-life situations must be preserved.