USING COMPLEX SIMULATIONS IN POLICY COURSES ON INSTITUTIONS WITH LIMITED RESOURCES

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COMPLEX COMPUTERIZED SIMULATIONS CAN BE USEFUL TOOLS
FOR TEACHING BUSINESS POLICY

Complex and open business simulations can be an excellent means of teaching business policy or capstone type courses in graduate and undergraduate curricula.

Instructors in small and medium sized institutions frequently dismiss the possibility of using complex computerized simulations in their curriculum because of the limited availability of computer related resources in their school. The memory and storage core requirements of the complex simulations can be considerably larger than that of the small computers available at the institution. One look at the language and complexities of the instructor's manual of a complex simulation can be very discouraging for the would-be game user. The instructor faced with these obstacles can use a simpler and less suitable game or retreat to using the case method of teaching business policy courses.

The would-be users of complex simulations have two sources from which to choose a game for use in a business policy course. The most readily available source is the list games being published and commercially available. However, most of the published games are designed for use in teaching or illustrating a particular business function or decision tool. These simulations are usually closed, require little in the way of computer related skills on the part of the instructor, and can be readily adapted to run on most small computers.

Published games

As of this date there are few published business simulations that are open-ended and with an adequate degree of complexity to use in business policy courses. The information supplied by the publishers to the potential user does little to cope with his problem of determining computer capabilities required for the game and matching these requirements with the capabilities available at his institution. In addition, it would appear that most of the instructor's manuals accompanying these games assume the potential user possesses a high level of computer programming skills.

Unpublished games

The faculty of some universities have developed their own complex simulations. These are used in the undergraduate and graduate curricula of the institutions and are usually the result of a continuing effort to provide students with experiential learning situations in policy type courses. These simulations, though not commercially published, are sometimes made available to other institutions. However, as in the case with the published games, the potential user is faced with problems in determining computer related capabilities needed and understanding how the game is used from the type of instructor information available.

The obstacles to using complex simulations in small schools by instructors without programming skills can be classified as follows:

1) determining computer hardware facilities needed to run the game

2) availability of needed computer hardware

3) programming skills related to simulations

4) understanding how to use the simulation effectively

This formidable list of hurdles can be overcome with the use of a little ingenuity and a measure of perseverance.

INTRODUCING COMPLEX SIMULATIONS WITH LIMITED RESOURCES

The writer has introduced two complex simulations into the curricula of programs offered by a small university with limited computer resources. It is hoped that a description of these experiences will be useful to instructors in like circumstances.

Introducing the Harvard Business Game

Dissatisfaction with the case approach to teaching policy caused me to take special notice of a MacMillan Company brochure about the Harvard Business Game. Departmental approval was received to attempt to introduce a new undergraduate policy course constructed entirely around a business simulation. The MacMillan player's instruction book was adopted for the course and the tape containing the HBG program was sent to our computer department. A program listing was made from the tape which revealed the astonishing news that the computer core requirements to run the game was more than twice the capacity of our system. Our computer people indicated that the only computer large enough to run the game was located at Eglin Air Force Base, 70 miles away. With the program tape and instructor's manual in hand, we approached the director of the computer department and requested assistance. They cooperated wonderfully. After they put the program on one of their computers and debugged It, we began the game on our campus. The decision inputs were punched on campus and delivered to the Air Force Base, where the program was run on low priority time at night and we picked up the printouts and brought them back for student use the following day. The delivery of the punched cards to the base and the printouts back to campus was the major problem during the first quarter of game use. However the very positive response from the students, despite the start up problems, made it all worthwhile.

We approached the manager of computer department of the Monsanto Company plant in an attempt to reduce the distance between the computer used for the game and our campus. The Monsanto Company plant is some six miles from our campus. Their computer lacked the core size needed but they suggested an overlay of the program so it could be used. During the summer their programmers, assisted by our campus programmer, managed to overlay the program so it would fit in 69K bit core and could be run on their computer. For the next

academic year the HBG was run on the Monsanto computer with only a 6 mile delivery distance instead of the previous 70 miles. During this year we managed to add additional core capacity to our campus computer so that the overlaid program of the HBG could be run on it. This allowed for more game administration flexibility in changing parameters and, of course, eliminated the need to transport the punched cards to the computer and the printouts back to the campus. It also allowed us to improve on decision turn around time since we had a higher priority on our own computer than at the other institutions.

It is also noteworthy that the positive student response to the game was a significant factor in the administration's decision to spend money to increase the core capacity of our campus computer. Several other disciplines benefited from the improvement in our computer capabilities.

In this case, two institutions provided both hardware and software assistance for a period of 1 1/2 years. During this time our programmers gained alot of skills related to simulation programming and the writer learned how to use the simulation more effectively.

Introducing the Carnegie-Mellon University Simulation

The results of the HBG in our undergraduate program were so positive that it lead us to search for a simulation for our MBA program. We wanted a more open game with increased interaction potential. A preliminary investigation of the published games revealed that none would be satisfactory. We then turned to unpublished sources and after some study it appeared the Carnegie-Mellon University simulation, (also called the Carnegie-Tech Game in previous versions), would be suitable for our MBA program. We approached C-M.U. about securing their game and negotiated for the program tapes, documentation and the student's manual.

Again our computer lacked adequate core capacity and our programmer knew little about the C-M.U. game program. The positive results of our first game experience not only contributed to the programmer and game administration's confidence but to that of the University administration as well. A modest amount of money was provided to bring a programmer from Carnegie-Mellon University to Pensacola. He spent a week with us during which he assisted our programmer in making some minor program overlays and other necessary software. changes. A practice run was successfully attempted before he left.

However, not having had the opportunity to actually administer the game we were not in the position to ask pertinent questions during his visit. When we started to run the C-M.U. game, we were faced almost daily with questions which involved program validity. In addition, some errors in the minor overlay portions of the program became evident. Our programmer was reluctant to correct some of these for fear of disturbing other unknown relationships within the program. Several phone calls were made to our programmer friend at Carnegie-Mellon University with varied results.

After several game decisions it became apparent that we would have to have outside assistance to de-bug the modified program. An additional sum of money was made available and the Carnegie-Mellon programmer returned for two days to assist us again. This time we knew what questions to ask and could

point to specific problems. The C-M.U. game has been running some 36 decision periods at the present point in time and I think we can safely say that the modified program is de-bugged and operating properly.

These two experiences have encompassed three years of the writer's time. Reflecting on these experiences leads me to make the following suggestions on to the reader, who may be contemplating using a complex simulation for the first time.

1. The institution's existing computer hardware need not be a limiting factor. The proliferation of computers is continuing and there should be few college communities that are too distant from some organization with computers of adequate size.

2. Agencies and companies in the vicinity of a college may be willing to provide their computers on a low priority basis and for something less than a permanent period of time at little or no cost.

3. These same organizations may have skilled programmers that can be utilized for short periods of time. If the organization is not willing to provide the programming assistance without charge, it may be possible to get the needed assistance on a part time consulting basis for a reasonable fee.

4. Don't let the complexity of the game frighten you away. Students learn the ins and outs of these games rapidly and you will too.

5. The response from students who get involved in simulations after enduring more traditional teaching methods is more than an adequate reward for the efforts required to track down computer hardware facilities and programming skills.

6. This positive student feedback engenders support from teaching colleagues and can be the basis for securing funds from administration to upgrade computer hardware facilities and programming skills.