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JUSTIFICATIONS FOR AND PROBLEMS IN DEVELOPING AND USING COMPUTERIZED EXPERIENTIAL ACTIVITIES

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ABSTRACT

This position paper advocates the computerization of experiential activities and the utilization of these activities in teaching business subjects and conducting related research. In addition, it identifies some of the problems encountered in developing computerized experientials and using them in the classroom. Several propositions related to the use and development of computerized experientials are presented.

INTRODUCTION

while computerized business games have been successfully utilized in the classroom for some time to simulate real world situations (i.e., the business simulation game used in many capstone business strategy and policy classes), most of these exercises require participant involvement over a number of weeks or class periods for the full benefit of the game to be realized. This macro-simulation approach is primarily designed to allow students to integrate knowledge from diverse subject areas, i.e. personnel, finance, production, marketing, etc.

The computerized experiential activity (CEA) is envisioned more as a one-time or short-term activity in which a person or group of persons, utilizing interactive software, carry out some task that relates to a specific course topic (e.g., Leadership). The objectives of this type of activity are to: (1) expose the individual or group to a course topic, and (2) give students the opportunity to determine their success or failure in applying the selected concept. In addition, the astute user of CEA's will see methods for using records of student responses for research purposes.

One might ask, "Row this all can be accomplished using a simple one iteration exercise?" The personal computer can be programmed to present instructions to student subjects, randomize and present a variety of different types of stimuli, record one or several types of responses, correct those responses and provide immediate performance feedback to students. Furthermore, the program can be designed to record the data on permanent media, analyze the data and provide summaries of the data to the researcher (2].

JUSTIFICATION FOR DEVELOPING AND USING CEAs

One strong argument in favor of CEA's is the mandate of the American Assembly of Collegiate Schools of Business (AACSB), the primary accrediting body of U.S. colleges of business. AACSB standards and guidelines specify that students have at least one year of work in five curricular areas. One of those areas requires exposing students to computer applications. AACSB guidelines [1, pp. 27, 29] further state that:

> ...computer hardware, software, and support resources available for teaching and research should be of sufficient capacity and accessibility to support curricular objectives and to encourage computer-assisted research and pedagogical development consistent with the objectives of the business unit.

In the last few years, the personal computer has done more to put the power of computing in the hands of educators and students than probably did the mainframe since its commercialization. Although the personal computer offers no greater variety of applications than does the mainframe, its small size and intimacy tend to provide the user with a feeling of control, increased flexibility, and improved productivity [3].

Proposition 1: Due to the emphasis placed on computerization of business curriculum and the increased availability and power of micro computers, there will be a rapid expansion in the development and utilization of CEA's in many business courses.

Another justification for CEAs is an antidote for what appears to be ever-increasing class sizes in today's business schools. As the number of classroom seats increase; it becomes more and more difficult to administer in-class experientials so that all students can take an active part in the process. Interactive computerized experientials provide a pedagogy that not only permits but requires all students to take an active role in their own learning.

CEAs also add to the variety of pedagogical tools that can be utilized in teaching business classes. While variety by itself does not necessarily mean an increase in teaching effectiveness and student learning, variety may increase the attractiveness of a course for students that relate more favorably to certain classroom pedagogies, i.e. advanced or remedial students who learn material at different rates than the average student [5]. For example, F. B. (Buck) Rogers [7, p. 3], Corporate Vice-President for Marketing at IBM states that "...minority students often respond more positively to computer-assisted instructions than to traditional methods because they perceive the new technology to be nonprejudiced."

Proposition 2: CEAs are an excellent method of providing individualized instruction to advanced, remedial, or minority students or students in large classes due to non-prejudicial machine interaction and a shift of responsibility to students for their own learning.

Furthermore, CEAs can serve as a medium to collect data for research purposes. David Fritzsche [4], in an article in the Marketing Educator's special issue on computing, lauds the value of micro-computers as data-collection research tools. The computerized experiential activity provides a potentially fruitful application of the micro for educational research. For example, a researcher could assimilate student responses to exercise issues to assess the difficulty of applying theory to practice.

Other potential benefits of using CEAs for research would include:

1. Reducing or eliminating of the "Hawthorne effect." Participants in the exercise would have no way of knowing that their responses were being recorded on permanent media. Consequently, less biased responses would occur. (Note: This "benefit" raises an ethical issue which each researcher must address--should student subjects be informed that their responses are being permanently recorded and tabulated for research purposes?)

2. Obtaining data on student response times. This could provide very important information on student familiarity with material, student involvement in the exercise, and expended effort.

3. Collecting of both longitudinal and cross sectional data. A complete data set for each student can be generated for all exercises assigned during the semester. This would be particularly useful in identifying decision making patterns, perceptual biases, and learning comprehension for individual students.

4. Co-computing power of the personal computer. Recent communication developments allow the personal to communicate with the mainframe. This allows the personal computer to be used for data collection while the mainframe can be used where it is more efficient, for sophisticated data analysis [4].

Proposition 3: CEAs provide an excellent data collection vehicle for research purposes due to the efficiency and effectiveness of data collection and recording using the personal computer.

Finally, and maybe most importantly, CEAs, as well as all other exposures to computers, can only serve to prepare students for the reality of the present and future business environment. Rogers [7, pp. 1-2] concludes that:

> computer literacy is becoming increasingly valuable as an employment credential as we become a more knowledgeable society. In the near future, 75 percent of the workforce will need some computer skills to perform their jobs. Computer literacy is no longer a subject of only academic interest, but one which will inevitably become part of our everyday life. It will play an increasingly important role in helping America maintain its technological leadership in our highly competitive world.

BARRIERS TO DEVELOPING CEAs

The following problems are associated with the development of CEAs. These major questions and many ancillary issues must be addressed prior to and during the development of a computerized experiential exercise.

Which operating system to use? The first problem facing an individual developing a computerized experiential is the decision on which operating system to utilize. Should one develop the experiential using MS-DOS, PC-DOS, CPM, etc.? At a minimum, one should be prepared to develop a package which will work on both IBM PCs and Apple lie computers. This still leaves open the question of what to do about other personal computers which are IBM compatible. For example, a program in BASICA written on and for the IBM PC may not work on a Columbia, Corona, or even a Compaq unless the operating system is the most current available. The availability and popularity of these types of micro-computers should be considered prior to developing programming for the experiential.

Programming: Who will do it and what to include in the program? Another major issue to deal with revolves around who will do the programming. If one attempts to do the programming, one may encounter many surprises along the way. One software author [5] points out several issues that should be considered before trying to develop software. Some of these include:

1. Software development is time consuming and labor intensive.

2. There is no such thing as a completed system. One will always need to be modifying and improving the experiential.

3. Programming always takes twice as long as expected.

4. Testing takes at least twice as long as programming.

5. Programming for unsophisticated users requires real sophistication in the programmer.

If one is unable to develop the programming for an exercise the above points should also be considered when deciding who to contract to perform the task. If one employs a programmer to assist in developing the experiential, then the problem of maintaining good communications between the programmer and the experiential developer must be considered. In addition, one should search diligently for a programmer who also has a basic understanding of the subject matter of the experiential. The programmer should also be aware of the low level of sophistication of many students who will use the exercises. A major emphasis should be placed on making the programs user friendly.

If one plans to utilize the experiential exercise for research purposes, programming will need to include, in addition to exercise development, a method of randomizing and presenting various stimuli or scenarios, recording responses, storing responses on permanent media, and even summary and segment analyses. Each of these additions require varying levels of sophistication and serve to increase the program's complexity.

A final developmental consideration concerns security. Steps should be taken to "protect" the experiential from tampering. One will quickly find that certain students take great pride in being able to alter data or change the program to obtain an advantage over other students. In addition, if students realize the program is being used for research, they may attempt to modify or sabotage the data. Remember, however, no security approach is infallible--it can be broken by any persistent arid sophisticated user.

Proposition 4: Academicians capable of developing CEAs are discouraged by one or more of the following barriers: nonstandardized operating systems and/or programming related issues such as, programmer selection, program complexity, and security.

PROBLEMS IN USING COMPUTERIZED EXPERIENTIALS

Several problems will be faced by those who decide to use computerized experiential exercises. These problems are obviously different from those discussed in the previous section but are of no less importance.

Student sophistication Students range in sophistication from those who are unable to turn on a computer to those that are able to break into almost any security system. The majority of students in introductory management courses will fit into the former category. The level of student sophistication should be foremost in one's mind when selecting computerized experientials. The experientials selected must be perceived by students to be straight-forward and easy to use. The program should lead them through the experience, almost to the point of holding their hands. Be prepared for all sorts of unanticipated results due to students making mistakes and not following computer instructions.

A user-friendly, menu-driven experiential is an absolute necessity. Anything less will result in loss of interest by students, not because the subject or experiential is boring, but because they do not have the computer acumen necessary to deal with the situation. As can be seen from the above comments, the personal computer, as a part of experiential learning, can both improve and impede learning.

Availability of machines One may be more than willing and very anxious to utilize computerized experientials but may find that one's institution has only a limited number of personal computers (PC) available, the wrong type of PC for the selected experiential, or the PCs are fully scheduled for other uses (i.e., computer instruction or word processing). Beyond the basic question of availability, one should be prepared to expend considerable energy arranging times when students can use available computers, and interpreting and possibly developing policy on the priority of users and the length of time PCs can be used during a session. Policies in each of the above areas, of course, will need to be followed not only by students, but also by all faculty using personal computers.

Support personnel Having the number of machines of the proper type available when needed will not be the only major concern. Effective administration of computerized experiential exercises will be very difficult without having proper support staff working in the computer lab. The lab assistant will face every conceivable question and even a few one might think unbelievable. If the lab assistant cannot answer the questions, the instructor will be the next in line. This reduces the time the instructor has available for discussion of the real issues the CEA is attempting to address.

Colleague resistance Some colleagues may feel that using computerized experientials is nothing more than programmed instruction and as such does not allow for the interaction needed to hold a student's attention. Colleague resistance is especially significant in those situations in which joint faculty decisions on required texts and course materials must be reached. However, today's personal computers and computer-aided instruction have a significant advantage over earlier forms of programmed instruction due to their "patience," novelty, and sound and graphics effects [6]. If hesitant colleagues can be shown that students tend to be eager to learn about personal computers and this enthusiasm spills over into classes which use the personal computer for other purposes, colleague resistance can be changed into acceptance.

Proposition 5: Academician acceptance of CEA's will be delayed due to one or more of the following factors: student fear of computer technology and inexperience, shortage of machines for student usage, lack of qualified support personnel, and colleague resistance.

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