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INTEGRATING COMPUTER LITERACY SKILLS IN THE UNDERGRADUATE CURRICULUM: THE ADVANCED ACCOUNTING EXPERIMENT

Richard B. Griffin, The University of Tennessee at Martin

ABSTRACT

Computers have been integrated into undergraduate courses since the 1960's. This paper is based on the experience gained from converting a course, which had been taught using transparencies and the blackboard to one using computers. It addresses issues and problems involved in offering such a course and the challenges in measuring students' computer literacy skills.

INTRODUCTION

In 1989, the Accounting faculty at The University of Tennessee at Martin decided to teach a required senior level accounting course using computers. Advanced Accounting was chosen because the topic of consolidations lends itself to the use of spreadsheets. With proper planning, one spreadsheet template could be developed and used to work most problems.

DEPARTMENTAL GOALS

The department hoped to achieve several goals. One was to provide graduates with a working knowledge of computers and spreadsheets. At the time, the spreadsheet, Lotus 123, had the most name recognition among our students' potential employers. Another goal was to have students develop professional looking documents.

To accomplish these goals the department made six decisions. First, both the computer and Lotus should be used. Second, while students would be required to work all homework problems on the computer, any spreadsheet could be used to work the homework. Third, homework must be printed out and turned in at each class meeting as well as being saved on a disk. The students would be required to bring disks to class each day and to turn the disks in if requested. Fourth, unsatisfactory homework must be resubmitted. Fifth, all exams would be given using the computer and Lotus. Finally, since computer literacy was one of the goals of the course, it must be tested.

COURSE ENVIRONMENT

When the course was first taught, a projector connected to an 8088 computer for the instructor and 8088 computers with two floppy drives for each student were used. The primary changes in the course have been to employ computers with hard disks and later develop a networked classroom. The software has been upgraded to Lotus 123 for Windows release 5.0.

The Class

The course has been offered at least two semesters every year with class size ranging from 18 to 35 students. It has been taught on a two-day-per-week schedule rather than on a three-day-per-week schedule allowing for longer class

periods. To provide additional time on test days, the class has been scheduled during the first class meeting time of the day, the last class meeting before lunch, the first class meeting after lunch, or the last class meeting in the afternoon.

The first time the course was taught, students were not expected to have a working knowledge of computers or Lotus. During the semester, it was decided students should be expected to know how to turn a computer on, access Lotus, open and save files, change the disk drive the computer is reading, and print.

Lotus and computer skills are taught in the classroom by working problems chosen from a textbook. From the problems, students learn to develop worksheet templates from blank screens which should save time when used to work other problems. It is stressed while there may be quicker and/or easier ways to set up problems on the computer, one must consider how the problem can be used in the future. Students are encouraged to suggest how tasks might be accomplished in different ways on the worksheet.

The department realized testing on computers could require some students to adjust study habits and wished to make students aware of this before their course grades were adversely affected. The first exam is given the fourth or fifth day of class to demonstrate the necessity of doing one's own homework and paying attention to non-accounting issues covered in class. Frequently, a student who fails the first test is still able to make an A in the course.

Longer class periods are better. At the start of each term, students have difficulty knowing what should be accomplished prior to the start of class. This includes booting the computer, accessing Lotus, and testing the disk drives. It was quickly learned class must start on time. The teacher has to be able to address the unexpected accounting and computer problems. Working with the computer and guiding the class through problems is difficult if everyone does not begin at the same time. Fewer computers crash during class if the computers have been booted at the start of class. At the start of class, a four to five minute quiz is given. Tardy students are not allowed to take the quiz. The time allowed for the quiz is the time it takes for the computers to boot and the instructor to boot the unoccupied computers. Extra computers (already booted) allow a student to move in case of a crash. Students taught to save work often, need only to retrieve the file from their disk. Even if they have not saved, the file can be loaded from the network or the instructor can provide students with the work done to the point of crash.

Students can obtain copies of class presentations by downloading files. This eliminates the time and expense required to provide handouts. Using the computer eliminates the need for transparencies. A student, who misses class, can easily obtain a copy of class work. Students can study the solutions outside of class to

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further examine formulas as well as formatting. When a student comes for help, it is not because the problem was incorrectly copied. In fact, the instructor can call up the computer file to help the student.

While networking computers created some problems, one advantage is it permits the instructor to easily provide students with copies of problems. Also, the network permits calling up a unique solution from a student's computer and sharing it with the class.

The Homework

Requiring homework to be printed ensures homework is neat and legible. All corrections as well as unprofessional looking documents require another printout. Students learn it is easier to correct mistakes made with a computer than work done on paper.

There has always been a degree of concern as to whether students are doing their own work. Originally, each student was provided a coded disk enabling the instructor to determine if a problem was copied and from whom the work was copied. Presently, disks are taken up at least once a semester and the disk directory is printed out showing file name, file size, and the date it was last saved. Students are encouraged to work together, but may not solve the assignment on one computer and save the solution multiple times on different disks.

The Test

Computer testing requires instructors to be prepared for more contingencies than does teaching without the computer. Before starting an exam, the instructor needs to insure computers work and decide what to do if they do not. Do not permit students in the classroom until enough computers are working. If the test is given to students, who boot the computers, a new exam may have to be prepared should the computers not work. Time permitting, the software should be accessed and the disk drives tested. Hopefully, the computers have been setup to erase any files saved on the hard drive during class. If not, be sure to check the hard drives and look for saved files, which could be used during the test. Several hours may be necessary to check the hard drives, if one knows what to look for. It is easier to check four or five computers at random the day before the test, and then not let anyone sit where they normally do. Also, other computer screens may be visible to students. This should be considered in deciding where students will sit. If student's names are written on the exams, they can be placed where the students should sit. If the number of functioning computers could be a problem before or during the exam, be sure to know how to swap keyboards, mice, and how to check monitor and printer connections. Know how to save to a disk drive other than the intended one and be sure to have disk for the other drive if a different type is required.

Besides making out the test, one must decide if the test questions will be on disk, on paper, or both. If the question is not on a disk, be sure to indicate the entire file name the solution should be saved under. If disks are used, provide them with the student's name already on the label. There is

always the chance students may try to swap disks. If some strange color of disk or label can be found, use them. It will make it easier to insure students are not using their disks to call up a file and change the numbers. There is no reason for a student to be using his/her personal disk. Always have extra formatted disks, one or two may go bad. If disks are not used always bring a few in case there is trouble saving to save to a hard drive or the network.

Grading computer skills require students to print out solutions and to save them on a disk. The instructor's job is easier if the file names have been predetermined in which solutions are to be saved. While printouts make the test legible, the grading of computer techniques and formatting requires one to open some test files on each student's exam disk.

Although, printouts were legible, it was discovered many students did not know how to print professional looking documents or to load paper in a printer. Document appearance can be tested by giving students a Lotus file in which the formatting must be changed; providing a printout of how things should appear; and having students adjust, save and print out the file. Grades should be assigned based on the printout's appearance and the formatting in the Lotus file.

Be specific in instructions. Teach students to save often. Have students save the file before it is printed, and then print the file before beginning the next problem. If the classroom networks to a limited number of printers, it is important that each problem be printed as finished to prevent a backlog of print jobs at the end of class. If students are not required to save work to a disk, there is always the chance a student could print out two copies of a problem and give one to another student.

The Safeguarding of the Exam

If one is concerned about a copy of the test getting out be sure that computers are setup to erase any files saved on the hard disk. After the test, reboot all the computers before leaving the classroom. When connected to a network, the system administrator needs to disable communications outside of the classroom while the test is being given. A student's work could be sent to a printer outside the classroom as well as to another computer. In some cases depending on the network setup, a student could communicate with a computer in another location and load files from it to be used on the test. This could easily be done if the classroom has Internet access.

CONCLUSIONS

Employer surveys criticize the communications ability of graduates if graduates are expected to be able to communicate using computer skills then these communication skills must be examined. Teaching and testing is worth the extra effort. Graduates with good computer skills start out a step ahead of other graduates. When graduates report their strong belief that their computer skills were essential to obtaining their first employment, you know your efforts were worthwhile.