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The Use of Technology to Augment a Once-A-Week Accounting Principles Course

Abstract

Each semester one of our Accounting Principles sections is taught once a week at night to accommodate non-traditional and working students. This necessitates a whole week's worth of the course being presented in one 6:30 – 9:15 PM session. Some students who are not prepared for the self-discipline required have a problem with this schedule. Communication with all the students is a potential problem. Through a pilot project, we are experimenting with the use of Lotus' LearningSpace (an asynchronous WEB based learning tool) in combination with an in-class "tech cart" to augment the traditional class delivery. The tech cart is equipped with a Pentium computer, VCR, and imager connected to a ceiling mounted LCD projector. The computer is connected to the University network on which the instructor has space to store files to use during the class. LearningSpace and the tech cart help reduce the communication gap and provide a convenient way to deliver materials to the students.

Introduction

Each semester the Accountancy Department at UW-L enrolls from four to five hundred students in the beginning Accounting Principles course filling from nine to ten sections. One section is taught at night to accommodate nontraditional and working students. This necessitates a whole week's worth of the course being presented in one 6:30 – 9:15 PM session, which puts a strain on the students' self-discipline. Students have to study through the week without the reinforcement of a class every two or three days. Communication with all the students is a potential problem. Many of them do not ordinarily come to campus during weekdays and cannot take advantage of regular office hours. So direct instructor contact may be limited to one evening a week.

While telephones have existed for some time, facilitating contact during non-class days, the aural nature of the telephone makes it limited for visually oriented subjects such as Accounting, and the unaided telephone is not a suitable conduit for course materials. The more recent introduction of computer technology holds promise for at least partially solving the key problems of the once-a-week accounting course: 1) communication, 2) materials, and 3) self-discipline.

Computer technology is being used in the night accounting course to assist the learning process. The technology being used includes: 1) Lotus LearningSpace, 2) the campus network with e-mail, 3) shared directories on the campus network, 4) technology carts used in the classroom, and 5) spreadsheets.

LearningSpace

LearningSpace is a Lotus Notes product running on Lotus Domino Server. It is designed to support WEB-based instruction by facilitating the distribution of materials, communication to the class, groups within the class or privately to individuals, and administration of assessments. Once the course is set up, these items are available to anyone who has Internet access, so it is available to students both on and off campus.

Campus Network, E-Mail, and Shared Directories

The network on campus developed as a collection of loosely integrated individual networks, but in recent years has come together in a well integrated network so that classrooms, labs and offices can have access to the same resources. Not all students have their own private server space, but this can be requested for individual classes, allowing the

students to work on their assignments from anywhere on campus with network access. Every student is assigned an e-mail account so that instructors can count on every student being able to send and receive e-mail.

Technology Carts

The College has installed several “Tech Carts” to support teaching in some of the classrooms. Each Tech Cart contains 1) a Pentium computer attached to the campus network and running the campus-standard software (Windows 95, Microsoft Office Professional 97 Pro, and Netscape), 2) an visualizer projection unit, 3) a VCR, and 4) a ceiling mounted LCD projector to show the output of the other three items on a screen.

The instructor’s shared directory is used to make materials available on the Tech Cart during class. The materials are prepared in the instructor’s office and then simply copied to the shared directory, whereupon they are available to the Tech Cart in the classroom.

Using the Technology

The stage is now set for providing students with assistance in learning. The use and benefits of LearningSpace will be described below, but a disclaimer is in order. What follows is not meant as a particular endorsement of LearningSpace compared to other similar products. The intent is to describe the uses and benefits of WEB courseware products, and we happen to use LearningSpace.

Use of LearningSpace

Every student in the class is given a LearningSpace account and instructions on how to log in and make basic use of the system. Thereafter, all course materials are made available in LearningSpace. This includes handouts, keys to exercise sheets, solutions to homework, PowerPoint slides of lectures, and spreadsheets and other examples. Handouts are printed and distributed to the class each week, but having them also available on LearningSpace enables students to get handouts if they have to miss class or if they lose a handout or want a fresh copy of an exercise.

LearningSpace is also used for announcements, “late-breaking” information about exams, corrections, etc. It is easy to make an announcement on LearningSpace. It is like an e-mail sent to everyone but has several advantages over e-mail. 1) The message remains on the system for all to see until removed by the instructor or the creator of the message. With e-mail, the recipient may read the message (or not), delete it, and forget it. 2) The message is

available to everyone immediately after it is posted to the Lotus Domino server. Regular e-mail is not so reliable. E-mail is often rapid, but sometimes it can take more than a day to get through, and if there is a problem with a server somewhere along the way, there are times when e-mail messages can get lost. Thus it is risky to assume everyone has received an e-mail message by any given time. With LearningSpace, one can assume that all have (or should have) read a message in some reasonable time after it is posted.

Using LearningSpace or regular e-mail, students can communicate with the instructor even when the instructor is not available by phone or in person. An added benefit with LearningSpace is that if a student asks a question by posting a message, the answer can be posted as a reply, and the thread is viewable by all the other students (unless the questioner has made the message private); all benefit from the discussion. The instructor can quickly send an example (either scanned, typed in, or in spreadsheet form) to a student to illustrate a point. This can also be done with regular e-mail using attachments, but the benefit here is that the item is available to all and is easy to download.

Thus many of the communication issues that plague a once-a-week course are at least potentially reduced using LearningSpace.

Use of the Tech Cart

During the class meeting, the Tech Cart is used for presenting material and creating and demonstrating examples. Lectures are accompanied by PowerPoint slides. The students are given 3-slide-per-page handouts, so they can take notes without having to copy the whole lecture structure. Examples and demonstrations are more effective through use of the technology. The course covers time value of money concepts in great detail, and live spreadsheets are an excellent tool for illustrating time value of money concepts. In particular, the amortization table is easily implemented as a spreadsheet, and can be used to illustrate the behavior of notes, mortgages, bonds, and other debt instruments. Changes can be made in the parameters of the debt and students can see immediately the effect on payments, interest expense, etc. Since the process of learning time value of money is facilitated by developing a good intuition, seeing immediately the changes in debt behavior given different inputs is very useful. The amortization spreadsheet is also made available to the students on LearningSpace so they can download it and use it on their own.

The Accounting topics of journal entries, T accounts and the effect of transactions on financial statements can be shown nicely with spreadsheets. The key feature is that the

spreadsheets are “live.” That is, they change appropriately when the inputs change, so that the effect of changes can be seen in seconds rather than the many minutes it would take to do examples by hand. Thus relationships that are difficult to discern doing examples and problems by hand become more evident on the spreadsheets.

A key strategy in learning Accounting is to learn actively through practice, playing with examples, doing exercises, etc. The technology facilitates generation of many examples and giving the students the tools to use these examples or to generate examples of their own.

Results

The question is, then, whether the students have benefited from these technology enhancements. Assessment was conducted through end-of-semester questionnaire and results on semester exams. The evidence is positive, but needs more study. In the questionnaire, students report liking the PowerPoint slides and handouts. That is not surprising. Students often display weakness in effective note taking, so one would expect that having an outline structure to start from would be helpful. Also, the instructor is sometimes not as organized as would be ideal, so the PowerPoint slides help the organization of the lecture and the coherence between the notes and the lecture.

The use of the spreadsheets for time value of money seems to be helping. The time value of money material and the Accounting material come together towards the end of the course when Mortgages, Leases and Bonds are covered. The Bond material has traditionally been the students’ downfall; students tended to do very badly on the Bond material on the exams. Grades suffered. Since spending time on building the time value of money fundamentals and using the spreadsheets, the students’ performance on the Bond material is much improved. No longer is the grade drop on the third exam so dramatic as it has been in the past.

The students have been very appreciative of the materials made available on LearningSpace. The solutions to homework get posted after the material is covered, as do keys for the exercises done in class. The LearningSpace system works much better than the old library reserve system, in which materials were available at times not always convenient, especially to nontraditional students, and then were often missing.

The biggest surprise and disappointment has been in the use of LearningSpace and e-mail for communication. It has been noted by many that UW-L students are hard working but very quiet. They are shy about asking for help whether in person, on the phone, and, as it

turns out, via e-mail. The expectation was that the use of e-mail and LearningSpace would encourage more spontaneous and frequent communication, that the students would fire off a message with a question when it occurred to them, but that has not been the case. Most of them read the messages that are sent by the instructor, but rarely do they send messages themselves and very rarely do they piggyback on a message thread that someone has started.

The students who do best in the course are the nontraditional students. They are the most assertive in the use of e-mail, ask the most questions, are more proactive and, due to the nature of their jobs, are able to relate the material to the “real world.” The traditional students are at a disadvantage. Less mature and less able to relate the material to their own experience, they have a harder time. One would expect that communication with the instructor and with each other would help significantly, but they are proving very reluctant to engage in that process.

In conclusion, the information technology we have available in the Principles course is excellent at facilitating delivery of the material to the students. It has been disappointing so far in facilitating two way communications between instructor and students and between students.