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ABSTRACT

This paper focuses on the rationale for incorporating Blackboard, a Web-authoring software package, as the knowledge construction tool in computer information system courses. The authors illustrate previous strategies they incorporated in their classes, and they present their uses of Blackboard. They point out their reactions as teachers, and the students' reactions to the program. The paper describes a class entitled Microcomputers for Business offered at Eugenio Maria de Hostos Community College, New York. The two instructors of this course unit employed the Concrete Active Learning (CAL) approach, which promotes long-term retention, leadership skills, and develops critical thinking skills. In the introductory computer course, students worked in teams to find answers to assigned questions and to analyze textbook reading assignments. In the programming courses, students were introduced to real-life experiences in programming. In the database management courses, groups of students designed and implemented databases for actual businesses in their neighborhoods and made oral presentations on the project. In the systems analysis and design course, the students formed their own groups in which they analyzed case studies based on the different steps of the system development life cycle. Students also completed a group presentation in which they analyzed the information system of an actual company in their neighborhood. (Author/NB)

THE USE OF BLACKBOARD IN COMPUTER INFORMATION SYSTEMS COURSES

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ABSTRACT

The paper will focus on the rationale for incorporating *Blackboard* as the knowledge construction tool in computer information system courses. The authors illustrate previous strategies they had incorporated in their classes, and they present their use of *Blackboard.*

In addition they point out their reactions as teachers using *Blackboard* and also the students' reaction to *Blackboard.* In the conclusion, the authors list recommendations and suggestions for the future study of incorporating computer technology in their classrooms.

INTRODUCTION

Computers as the means of instruction—boon or curse? According to Lai, for computer technology to be effective and not follow the way of all other technological answers to education's ills, "teachers must hold a belief system which is compatible to the constructivist approach to learning." (Lai) The constructivist approach to learning "assumes that people actively create their own meanings of knowledge based on their personal interactions and experiences." (Gueldenzoph) According to Gueldenzoph, "Humans naturally learn by doing." (Gueldenzoph) However, constructivist theory is more than simple activity. According to faculty from the University of Oklahoma, "constructivism suggests that learners are particularly likely to create new ideas when they are actively engaged in making external artifacts that they can reflect upon and share with others." (University of Oklahoma)

Gueldenzoph further states that computer technology supports "the elements of creating ideas, producing information, and communicating it." (Gueldenzoph) She makes an important point when she states that "understanding cannot be taught or given from the teacher to the student; it belongs and is owned by the student." (Gueldenzoph) She further states that "understanding cannot be gleaned from technology, but by interacting with technology. Gueldenzoph aggrees with Lai in viewing learning as process rather than product. In their studies, Gueldenzoph and Lai agree with Batson and Bass who state that "Teaching is primarily about process because it is only 'in process' that its knowledge and skill are made manifest—in the process of discovery experienced by students and, in those precious moments, by teachers as well." (Batson & Bass)

According to a group of faculty members at the University of Oklahoma, they are convinced that "teachers need to give up their deeply held belief that students cannot learn the subject at hand—unless the teacher 'covers it,' that is talks about it." They go on to state that "The alternative view [process learning] is that, while it is helpful for students to get some 'initial' exposure to the content via pre-

class readings or some overview lectures, students' don't 'really get it' until (a) they 'do' something with it and (b) they think about and reflect on the meaning of what they are doing." (University of Oklahoma.)

TEACHING COMPUTER CORSES AT EUGENIO MARIA DE HOSTOS COMMUNITY COLLEGE

The Computer Information Systems and Technology Unit offers an option entitled Microcomputers for Business. The goals of the Unit are:

- To provide students with an understanding of hardware and operating systems of various microcomputers;
- To provide students with the necessary tools so they are able to develop business applications using pre-packaged software;
- To provide students with a basic understanding of data communications and networking principles; and
- To provide students with adequate verbal and written communication skills.

In addition to the Unit goals, each faculty member has established the course goals of developing the following skills:

- critical thinking
- written and communication
- presentation
- interpersonal

The instructors achieve the course goals through a number of activities in addition to the traditional lecture method.

In the traditional lecture method, the student relies more on the instructor for learning content matter. The instructor lectures on the subject using the whiteboard or chalkboard for illustration. Few faculty within the Unit use the overhead projector for illustration. The instructor asks and answers questions. Written assignments, programs, and projects are given to reinforce learning based on the lecture. The student takes notes during the class lecture and occasionally may ask questions. In the traditional method, the student is passive.

In order to promote or encourage active and collaborative learning, the two instructors in the Unit have worked with the CAL approach. CAL is an acronym, which means Concrete Active Learning. The purpose of the CAL approach is to promote long-term retention and leadership skills. The CAL approach also develops critical thinking skills, re-enforces writing skills, and helps students function in a team. The instructors view knowledge "as a social construct, and therefore the educational process is facilitated by social interaction in an

environment that facilitates peer interaction, evaluation and cooperation."(Hiltz) The CAL approach is used in combination with the traditional lecture method.

In the introductory computer course, the instructors divided their classes into groups and gave them hard copy assignments that they had to complete with their group members. The students worked on assignments from their textbooks. The idea was to have the students work in teams to find the answers to the questions they were given and to improve their reading skills by asking them to analyze the paragraphs they had read in their textbook. The approach was helpful to the students in that they were able to learn on their own, make use of the textbook, and learn to work with others.

In the programming courses, the students were introduced to real-life experiences in programming. Students were given hard copy assignments in which they had to write programs that involved modules. The group was given the task of dividing the modules and writing the program code.

In the database management course, the students had a group project to design and implement databases for actual companies in their neighborhoods. Each member of the group was required to make an oral presentation of their project.

In the systems analysis and design course, the students formed their own groups. They had to analyze case studies based on the different steps of the system development life cycle. The students also had to complete a final group presentation of analyzing the information system of an actual company in their neighborhood.

The CAL approach has been very helpful for students in developing working relationships with their peers and in preparing them for the present work environment, which stresses teamwork and collaboration.

The computer courses have been taught in traditional lecture classrooms with the exception of courses that had to be taught in a computer lab because the students were manipulating the software. The computer was never seen as a tool from which the student could learn. The computer was seen as a tool that had to be mastered. There was a body of knowledge about computers that the student had to learn. Internet activity was at a minimum. When the instructors assigned a project, the students had a choice between hard copy and the Internet. The instructors would take the students to the College library and teach the students to use the library computer database to look for magazines and books.

THE USE OF BLACKBOARD IN THE COMPUTER INFORMATION SYSTEM COURSES

The Academic Computing Center of Hostos Community College conducted a series of training on web-based authoring tools. The use of a web-authoring tool

was then introduced to enhance the learning process by combining the CAL approach with technology. At the time, the College was using *Web Course in a Box*. Two of the instructors in the Computer Information Systems Unit decided to incorporate *Web Course in a Box* in their courses because they wanted to use technology as a knowledge construction tool. At first, the instructors used the authoring tool to keep track of students' grades and to communicate with the students. The students found *Web Course in a Box* helpful in keeping track of their assignments, course outline, grading standards, and communicating with the instructors. After two semesters of using *Web Course in a Box*, the instructors found that they could do other activities with the authoring tool. By the third semester, the College had migrated to *Blackboard*, the parent of *Web Course in a Box*.

The instructors found that using *Blackboard* allowed the students to become more actively involved in the learning process. The students are more enthused using the computer as a knowledge construction tool.

The instructors wanted an opportunity to use the computer as the center of learning. With the computer, the instructors could let the students work in groups and learn about computers by using computers in situations other than completing laboratory assignments. A good number of the students come to the College with some type of computer knowledge. Their computer knowledge may be no more than Internet chat rooms, computer games, or manipulating software to complete reports and class assignments, but they do come with a knowledge that the computer has some use for them.

The instructors try to build on that knowledge by having them communicate with the instructors through e-mail, a feature with which many are familiar. The students are familiar with working in groups or teams, but in their computer classes, they have to depend on each other to work together to complete a project. They realize that they have to spend time outside the classroom to complete an assignment or project. They have to communicate with each other. For many, the telephone is not a viable option. *Blackboard* allows them the opportunity to communicate with each other.

Collaborative learning is encouraged through the "Discussion Board" and e-mail. A virtual diverse community is created as communication and sharing of information takes place, even though the students are separated geographically.

In addition to e-mail communication, the instructors have used *Blackboard* to foster dialogue among the students through the "Discussion Forum" feature of *Blackboard*. The instructors give the students a topic on some aspect of computers and encourage the students to make comments on each other's thoughts. The students respond to the topic, but they have difficulty commenting on each other's thoughts. The "Discussion Forum" is the most difficult activity for

them. They can work together in teams and communicate with each other and the instructors through e-mail, but they have difficulty critiquing each other.

Central to the use of the computer as a "knowledge construction tool" is getting the students to use the computer as a source of information. The instructors assign various "library" assignments in which the students work in groups to complete a written and oral presentation. In the beginning classes, the assignments consist of a deeper investigation into the categories of computers, investigating the networking system in a bank, school, or franchise, advising a company on the type of computer system to purchase, and researching the different career paths in the computer field.

The library assignments encourage the students to view the computer needs of their community, reinforce the concepts that they have studied in a textbook by putting the concepts in a real-life environment, and to work together to complete a project. The students have to use the computer to compare computer systems, to learn more about a specific category of computers, and to understand network theory.

In addition, the instructors have used the Shelly Cashman Interactive Labs CD-ROM. In one class session, the students are given a set of questions before they see the CD. Each group receives one CD. They are required to answer the questions from the CD. In addition, the instructors give them a set of questions not covered in the CD. The students work together in groups to answer the questions. In the second class session, the instructors ask the students specific questions from their assignments. They can read from their notes, but they have to make sure that they answer the questions in their own words. This session serves as a review. Fifteen minutes before the class ends, the students answer a question that the instructors post on the "Discussion Board." The question pertains to the materials they have read and answered in the review. The exercise is designed to reinforce writing skills and to serve as a review of the material covered in the chapter.

In the advanced computer classes, such as Systems Analysis and Design, the students are given several case studies to analyze and present to the class. They are also given a major project in which they have to locate a company and investigate a particular information system to see if the system is working efficiently. They have to make recommendations for updating a system, creating an e-commerce site, or installing a computer system.

Blackboard provided these students in advance computer classes access to external resources on the Internet for further exploration of each step of the systems development life cycle. The instructors gave them assignments from the "External Links" to reinforce the theories presented in class. The students had to incorporate the extra readings in their analysis of their case studies.

EVALUATION

Advantages

- Announcement Editor is used to inform students of important dates, corrections or any matter that needs immediate attention.
- Course Information, Course Document and Assignment are used for students to have access to all relevant information about the course. The students can access the course syllabus, grading policies, chapter summaries, lecture notes, the textbooks used for the course, and the various assignments that they will have to complete for the semester.
- The students are always aware of their progress and the course requirements because their grades and assignments are posted.
- Self-assessment quizzes and review material are accessible, which allow for students to review material. The students are, therefore, better prepared for class and the exams.
- Students especially appreciate solutions to assignments, particularly during test time.
- Solutions to programming or homework assignments are posted without delay, even if the instructor has not completed the individual student's assignments.
- The students have access to the instructor at anytime through e-mail.
- External links provide more resources for the students
- Students are able to send files and mail to instructors and other students, thus eliminating paper. This is especially true in programming classes when the student encounters difficulty in completing a program. The student is free to e-mail the instructor and send the file to the instructor.

Disadvantages

- Students are accustomed to receiving all their information from the instructor and receiving hard copy from their instructors. They had difficulty acclimating to a course without paper.
- They also had difficulty working together, particularly first-semester students.
- Students who did not have computers at home had difficulty with the course.
- Students had difficulty posting questions on the "Discussion Forum." The students preferred to e-mail the instructors directly because of their fear of their peers reading their comments and seeing their errors.

At the end of the semester, the instructors gave the students an evaluation sheet for their feedback on the entire learning process. The students liked using Blackboard as a record of their grades, course outlines, and other pertinent course information. They did not have any papers to lose, and they could not say that they forgot an assignment since the assignments remain posted on

Blackboard. Some students had problems working in groups. They felt that one or two members of their group did not participate and caused them to receive a lower grade. The students did like having their grades available at all times. They knew when they needed to work harder on a particular assignment if any grade was low. They liked the library assignments. They learned a great deal by going outside the classroom, and they enjoyed using the Internet. They had mixed feelings about the "Discussion Forum" because many of them do not like to write. They knew that the oral presentations were important, but they were fearful at first and some even looked forward to the oral presentations because they knew the activity was important.

CONCLUSION

The instructors have only begun to scratch the surface in using CAL activities and the computer to foster "active participation and interaction on the part of both students and instructors." (Hiltz) For the next semester, the instructors plan to include writing exercises in which the students read from professional and technical journals and summarize the articles. The instructors also plan to conduct an experiment to determine the effectiveness of grouping, writing assignments, and the use of the computer as a knowledge construction tool.

In conclusion, the use of web-based authoring tools, the computer, and collaborative learning will only work effectively if instructors are convinced that teaching is a process and that a number of activities, methods, and equipment are available in aiding process-oriented teaching.

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