

# Technology in Learning and Teaching

FROM TRADITIONAL CLASS	TO ONLINE SUPPLEMENTATION
• teacher-centered	• learner-centered
• passive	• <b>interactive</b>
• comprehension	• acquisition of content
• content	• process
• subject-oriented	• task-oriented
• class	• session
• theoretical	• practical
• individual	• team (cooperation and collaboration)
• print media	• mixture of media
• fact-centered	• problem-centered
• limited dialog	• unlimited dialog
• limited access to peers	• convenient access to peers
• inconvenient searching of resources	• convenient searching of resources
• limited resources	• large volume of resources

## What is online learning?

"Online learning is an educational model for designing interactive, responsive, and valid course information while providing learning opportunities accessible at a time, place, and in appropriate forms convenient to the learners."

## Why Online Learning?

- Students have access to peers (easy access outside class time)
- Students have access to instructor (easy access outside class time)
- Students have access to course materials and supporting resources
- Students have access to a dynamic course calendar
- One-stop shop for class communications, presentations, course materials & resources
- Promotes dialogue and enriches and strengthens learning opportunities for students
- Improves interaction, cooperation, collaboration and feedback
- Improves planning and organization

## How Important is Interaction?

Research findings on the need for interaction have produced some important guidelines for instructors organizing courses for online students:

- Learners value timely feedback regarding course assignments, exams, and projects (Egan, et al., 1991).

- Learners benefit significantly from their involvement in small learning groups. These groups provide support and encouragement along with extra feedback on course assignments. Most importantly, the groups foster the feeling that if help is needed it is readily available.
- Learners are more motivated if they are in frequent contact with the instructor. More structured contact might be utilized as a motivational tool (Coldeway, et al., 1980).
- The use of technologies such as fax machines, computers, and telephones can also provide learner support and interaction opportunities.

### **Why is Instruction Successful?**

Good online teaching practices are fundamentally identical to good traditional teaching practices and "those factors which influence good instruction may be generally universal across different environments and populations." (Wilkes & Burnham, 1991). Because online education and its technologies require extensive planning and preparation, online educators must consider the following in order to improve their effectiveness (Schlosser & Anderson, 1994):

- Extensive pre-planning and formative evaluation is necessary. Teachers cannot "wing it". Learners value instructors who are well prepared and organized (Egan, et al., 1991).
- Learners benefit significantly from a well-designed syllabus and presentation outlines (Egan, et al., 1991). Structured note taking, using tools such as interactive study guides, and the use of visuals and graphics as part of the syllabus and presentation outlines contribute to student understanding of the course. However, these visuals must be tailored to the characteristics of the medium and to the characteristics of the students.
- Teachers must be properly trained both in the use of equipment and in those techniques proven effective in the online education environment. The organization and reflection needed to effectively teach online often improves an instructor's traditional teaching.
- Learners get more from the courses when the instructor seems comfortable with the technology, repeats questions, and possesses a sense of humor (Egan, et al., 1991).

### **Course Delivery/Management Issues**

- Faculty need an ongoing relationship with a technical-support person so that students will receive support and the course will be of high quality. (Aase)
- Tight deadlines are necessary throughout the course to keep the group moving through the content and to have the discussion groups coherently interacting. (Aase)
- Compatibility has been the biggest difficulty - we surveyed our sites and helped them set up (software, sound cards, etc.) to be compatible. (Litchfield)
- Include downloads of required software on course website or in a companion CDROM. (Litchfield)

- Tell your students how you expect them to behave in your course, remind them periodically, and then trust them to do so. Expect responsible, honest, ethical behavior. Don't make yourself and your student miserable by expecting dishonest behavior.
- An online course or component should be inductive and interactive.
- Use an online component to make the class contemporary and current (i.e., include links to current research, news, references).
- Include an online component in order to add multicultural and international dimensions to the subject matter.
- Develop your course and grading methods such that students don't feel pressured to "cheat."
- If you are planning on monitoring individual student use of online material, let your students know this up front.
- Monitor use of your online material. You may then be able to tell if students are having difficulty with a particular concept (i.e. large increase in "hits" on a particular topic), whether some members of the class are falling behind, or if someone has suddenly stopped participating.
- Need to check external links regularly for functionality, accuracy, validity and content. (Several tools exist that will perform such checks.)
- If materials (lessons, homework, readings) are posted online, it is much easier for students who must travel, who are sick, or otherwise unable to get to regular lecture periods, to get the learning materials that they would otherwise miss. This reduces student panic and the number of calls to the instructor.
- Some libraries provide an "electronic reserve" service wherein they will post required readings online.
- Expect and plan for problems, such as students who cannot access their email, students getting locked up half-way through a timed on-line quiz, etc. Be flexible and have a backup. If you are suspicious of the reported problem, most courseware programs include student tracking routines that can be used to investigate and verify some types of problems. Also train your students on how to deal with common problems and establish reporting protocols and procedures.

### **Common Research Questions**

Because online education is perceived as an increasingly effective method of instruction, researchers have examined the purposes and situations for which online education is best suited. Frequently asked questions cluster in five areas:

- Is technology-assisted teaching as effective as traditional face-to-face teaching?
- How can teacher-student and student-student interaction most effectively take place?
- What factors determine the most effective mix of technology in any given teaching situation?
- What are the characteristics of effective online students and teachers?
- What cost factors should be considered when planning or implementing online education programs and how are those costs offset by benefits to the learner?

### **Cost vs. Benefits (more specific to dist. Educ. But also valid for online learning)**

When establishing a distance education program, one of the first things considered is the cost of the system. Several cost components factor into the design of a distance education system (Threlkeld & Brzoska, 1994):

- Technology - hardware (e.g., videotape players, cameras) and software (e.g., computer programs).
- Transmission - the on-going expense of leasing transmission access (e.g., T-1, satellite, microwave).
- Maintenance - repairing and updating equipment.
- Infrastructure - the foundational network and telecommunications infrastructure located at the originating and receiving campuses.
- Production - technological and personnel support required to develop and adapt teaching materials.
- Support - miscellaneous expenses needed to ensure the system works successfully including administrative costs, registration, advising/counseling, local support costs, facilities, and overhead costs.
- Personnel - to staff all functions previously described.

Although the costs of offering distance education courses may be high, there are high costs associated with offering conventional courses. Benefits of distance education courses to the learner include (Ludlow, 1994):

- Accessible training to students in rural areas.
- Students may complete their course of study without suffering the loss of salary due to relocation.
- Students are exposed to the expertise of the most qualified faculty.

Perhaps the question institutions must answer is whether it is part of their mission as educators to offer programs to those who might not be reached without distance education. The primary benefit to educational institutions through distance education may be the increased number of non-traditional students they are able to attract and serve. Research also suggests that as programs become more efficient, program costs should decrease (Ludlow, 1994).

# Faculty Dos and Don'ts

## Do

- 1) Ask students to post their questions to the bulletin board so peers can answer
- 2) Stimulate conversation online by prompting them with good questions
- 3) Have students post peer reviews
- 4) Have materials available for review or preview of important topics covered in class
- 5) Explicitly state expectations of how students are to use the course's online portion:
  - How often will you check your e-mail? 24 hours? 48 hours?
  - How often should students visit your web course or check their course e-mail?
  - What should they do when they get into the online portion of the course?
- 6) Have specific activities for students to do online week to week
- 7) Give points for students going online and performing tasks
- 8) Give frequent short online quizzes. Students like immediate feedback.
- 9) Have an announcements page directing students to their next set of tasks
- 10) Let students know where to find computer help (i.e. Student Computer Help Desk location and phone number.)

## Don't

- 1) Don't answer e-mail questions sent directly to you unless they are specific to grading issues or disabilities. Have them post to the class bulletin board first!
- 2) Don't have a static web site where there are no changes week to week
- 3) Don't expect students to use technology just because it's there
- 4) Don't expect students to read manuals or go to training on their own
- 5) Don't expect students to know "netiquette" (etiquette for using online tools, what's appropriate, how to behave in the online environment, etc.)

## Top Ten Reasons for Using Communication Tools

Communication tools are often the first elements of WebCT that instructors use. In part this is because these tools can be added to a course without much preparation. For example, instructors can add the Discussions and Mail tools without having a great amount of prepared content pages to offer students which allows instructors to get started with online instruction quickly.

- 1) Using communication tools is a quick and easy way to get launched online.
- 2) Introducing communication tools to students helps them to acquire computer skills that are necessary in our modern world.
- 3) Using online communication tools allows instructors and students flexibility. Stay at home, avoid office hours, and "go to class in their pajamas."
- 4) Students can participate in discussions, using asynchronous tools such as bulletin board, anytime, anyplace.
- 5) Communicating online allows students to overcome the impersonal nature of distance education courses.

- 6) Using communication tools encourages students to overcome social, cultural and physical barriers that may exist in face to face situations.
- 7) Communicating online encourages peer to peer learning and mentoring.
- 8) Students become resources, creating projects that can be shared with their peers. This increases their sense of involvement in the course.
- 9) Using tools such as bulletin board and student presentations allows students to discuss class readings, continue seminar debates and create material that can be become part of the course.
- 10) Communicating online, particularly when students become involved in course development, increases student involvement in the course. This often encourages a sense of ownership in courses.

All of these things tend to make students responsible for their education and develop lifelong learning skills. Because the activities that are possible using the communication tools encourage active learning, it tends to increase the students familiarity with and retention of the material. Courses like these are student- rather than instructor-centered, allowing faculty to become facilitators of learning rather than the source of learning.

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#### **Quotes from students using WebCT at CSU Chico**

- I like being able to see my progress and grades at any given time.
- I found the web site to be one of the most helpful tools I've ever used in school.
- I have access to course materials and my peers all in one location.
- I like being able to review the information and do things on my own time...
- I like the immediate feedback on tests and quizzes.

91% agreed that the online activities stimulated their interest in the subject matter.  
68% agreed that the online course materials allowed them to use their time more efficiently.