

# College Teaching

*Improving the Teaching of and by Teaching Assistants*

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## Technology Integration



May 5, 2004

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Module content developed by Albert L. Ingram  
with contributions by Kristie Pretti-Frontczak, Mandy Brooks, and **xxxxxxxxx**

## Overview

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The topic of integrating technology into the college or university classroom is a broad one. Technology choices abound today and run the gamut from tools to enhance classroom presentations to complex software for enabling cooperation and collaboration over the Internet. Learning how to use these choices effectively for education is an ongoing process, not one that can take place in a week or two out of a single course. Among the steps are:

- Learning what is available to use, both generally and in a specific situation.
- Learning how to use different technologies such as computers, projectors, digital cameras, video cameras, and many others. In addition to these types of hardware, there is a wide variety of software programs that might be mastered that can improve our teaching and our teaching materials.
- Just knowing how to use a specific technology is not necessarily the same as knowing how to use it effectively to teach, so there are many skills to be learned in applying these skills as well.

This module is meant as an introduction to these topics, with links and other resources that can let individuals explore them further.

## Goals and Objectives

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The possible goals and objectives for this module include the following:

- Learners will choose media and technologies that are appropriate to the type of course they are teaching (traditional, hybrid, online, and so on).
- Learners will choose technologies that can enhance the subject matter of the course and the learning of the students.
- Learners will use technologies in ways that enhance student learning.
- Learners will pursue at least one instructional technology in depth, learning both the mechanics of how to use it and skills in integrating and adapting it into their teaching.

## Guidelines for Use

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Because this topic is potentially so large, those using the module as part of a college-teaching course must help the students focus on especially relevant parts. There are several ways in which this might be accomplished:

- The instructor could choose to focus in the course on one area of technology and its integration. This could be useful if, for example, it is known that the class members are likely only to teach one type of course (e.g. traditional courses). The drawback is that the students may not get sufficient exposure to other modalities to allow them to teach completely or partially online, for instance.
- The class could be divided into small groups, each of which could research the integration of specific types of technologies into a course. In-class and online presentations could communicate the results of the projects to the other students.
- Each student could choose a specific type of technology to gain basic mastery in, such as Web development, digital video, or online communication.

## Module Content

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### Creating a Course Website

#### What is the Web good for?

The first thing that instructors do when adding technology to a course is put materials on the World Wide Web. They may do this using one of a number of Web editors. Or, more likely now, they may use a course management system (CMS) such as WebCT or Blackboard. The choice of which CMS to use is often made by the college or university as a whole.

Either way, the instructor should consider some key questions about what the Web might contribute to the instructional process. Often the first step for instructors is to use the Web to make administrative information for the course available to students: syllabus, schedule, announcements, and so on. The next step is then to start using the Web for more instructional purposes.

*Information Presentation.* One thing that the Web is good for is to present information to students. We have many other ways to do that, of course, so information placed on the Web should add to the information available through textbooks, other readily available print resources, lectures, and so on. It should not merely duplicate it unless there are compelling reasons to do so. The Web is an especially good place to present information that is more up-to-date than is available from most textbooks, that can be found no place else (at least not easily), or that presents the unique perspective on the field offered by the instructor.

*Connecting to other sites.* The Web is a vast repository of information. Much of it is junk, but some of it is important and not available anywhere else. One role for an instructor in almost any field nowadays is as gatekeeper to the information available in that field. Thus, the instructor should search for sites that offer information (and interactions—see below) that are useful for students. This will again include the latest information in the field as well as different perspectives on the same information. It can even include websites that do not meet the quality standards of the field, as an exercise in critical thinking for the students.

*Interactions.* Finally, the Web can offer ways to help students interact with the material in a course in ways that might not be possible in the classroom. There may be websites available that offer tests, quizzes, and online exercises that students can use. (Many textbook publishers are now offering such sites for classes that adopt their products.) If an instructor cannot find interactive materials that seem quite right, he or she may design and develop them directly. New software is making it increasingly easy to accomplish this. Course management systems often have ways to present various kinds of test items online. Outside of such systems, software such as Hot Potatoes for creating quizzes and other exercises, Coursebuilder for creating a variety of interactions in the Dreamweaver Web editor, and Quandary for developing online interactive case studies is available for low or no cost.

### Putting Material Online

We now have a huge variety of ways to put course materials online. Specific institutions likely support different systems. We can break down the possibilities into two main categories: Web Course Systems and Web Development software. They each have advantages and disadvantages.

### **Web Course Systems**

Web Course Systems are commercial systems that try to offer complete environments for presenting educational materials on the Web. (There are several non-commercial “open source” course systems now in development as well.) KSU currently uses WebCT and is upgrading to its more comprehensive “Vista” version in the relatively near future.

#### *WebCT: Vista*

WebCT: Vista is the latest version of the WebCT course system. It has undergone many changes and is a very different product from the earlier versions. Vista includes all of the usual things one expects in a course system: calendar, grade book, discussion board, places to put course notes, assignments, and other key items, and many others. Some of the significant improvements in the Vista version include:

- The ability to share content among courses and sections of courses.
- Vastly improved ability for the instructor to assign students to groups and then provide a range of tools for them to use in completing assignments, collaborating on projects, and so forth.
- An impressive chat tool that allows classes or groups to communicate and collaborative synchronously.

#### *Blackboard*

Put description here

### **Web Development Software**

Web Development software includes a large variety of web editors and other programs available for prices ranging from nothing to hundreds or thousands of dollars. A few programs have become more popular than the rest, including Microsoft FrontPage 2002, Dreamweaver MX, and Flash MX.

#### *FrontPage*

Microsoft FrontPage 2002 is the latest version of this popular website editor (but a new one is due out in Fall, 2003). It consistently gets excellent ratings and reviews in the computer press and is considered especially good for relative beginners in Web development. Microsoft has also been adding features and capabilities to make it more attractive to advanced users. One of its strengths is that it follows the standard Microsoft Office interface very closely so that, if you can use MS Word, chances are you can use FrontPage very readily. Some of its features are available only if you host your site on a server running a set of programs called the Microsoft FrontPage Server Extensions. One disadvantage is FrontPage’s concentration on producing pages to displaying using Microsoft Internet Explorer, sometimes leaving users of Netscape Navigator and other browsers less satisfied.

#### *Dreamweaver*

Dreamweaver MX from Macromedia gets very high ratings and good reviews as a website editor. It is especially good for more advanced users, who will likely welcome its precise formatting capabilities and ability to produce pages for different browsers. It is more complex than FrontPage and takes more time to learn. Knowing a program such as MS Word will help you less in learning Dreamweaver. If you are interested in creating your own site and having a great deal of control over how it looks and acts (and if you have the time to learn and use it) Dreamweaver is a good choice.

### *Flash*

Flash MX (Macromedia) is primarily a program for producing short movies and animations, but recently it has been evolving into a tool that allows interactive programs to be built that can serve as the primary interface to a website. College teachers might use it for two major purposes: 1. to create an interactive interface to the material on their site and 2. to create instructional materials to be presented on the Web. The second category might include simulations (e.g. of physics experiments), informational movies (e.g. showing astronomical phenomena), and interactive instructional programs. Many other uses are possible as well.

Put Introductory Text here to explain what is being described below???

## **Discussion Boards**

### Description

Discussion boards are online communication tools used for asynchronous discussions. They are comprised of forums, which contain topics and messages pertaining to a particular theme, and discussion threads, which are a series of messages in response to the topics. Threads allow asynchronous online conversations to take place.

The user has the option of selecting the forum, reading the discussion threads, and responding at a convenient time. Typically, access is available twenty-four hours per day, allowing time for reflection prior to response. Anyone with forum access can read the posted messages, and reply with new messages. All messages, both current and former, are available to forum users. Many forums have password protected logins, limiting the users to a specific group.

In education, discussion boards are used for class discussion, and for collaborative activities and projects. Discussion boards also allow for flexibility in course delivery, serve as a mode of feedback, create an avenue for idea sharing plus information exchange, and provide the opportunity for active text-based learning. In addition, discussion boards can be used as a form of instructor-student communication, as well as student-student communication. Discussion boards are contained within course management and delivery systems such as WebCT and BlackBoard, or can exist as standalone forums such as Web Wiz Forums.

### Guidelines

### Warnings

### Resources

## **Document Cameras**

### Description

Document cameras are very useful for presenting information and other things during a presentation or lecture. They can show pieces of paper with text and images or have actual objects placed on them so that all students can see. In an interesting variation, they can be placed so that an entire lab experiment or other demonstration is easily visible to all students. They are not much good on their own but require a projector and screen and, perhaps, a computer.

### Guidelines

As with overheads and computerized presentations, one of the first guidelines is to ensure that your audience can see what you display. With text that means making sure that the

text is large enough and fits the field of the camera. Most of these systems have the ability to zoom in and out, so you have some control over text size. However, sometimes when you zoom in to make the text large enough, you will find that some of the text is cut off at the edges. A normal page from a printer or in a book will rarely be the correct aspect ratio to display well, so you may have to format things especially for the camera. The same may be true of images that you want to display.

With objects you will have to make sure that you can focus the camera correctly and that it picks up the features that you want to emphasize. In some science classrooms, these cameras are used to allow classes to follow an experiment or demonstration.

### Warnings

### Resources

## Groove

### Description

Groove is desktop collaboration software that allows person-to-person and small group interaction. Groove is a peer-to-peer platform which means that information is stored on each member's computer rather than on a server. This software has many features including a shared calendar, discussion board, audio and text chat, web browser, notepad, and the ability to share files.

### Guidelines

This tool is best used with faculty collaboration or graduate students. Because it is peer-to-peer, the information is stored on each user's computer and not a server, therefore each user needs their own computer which is unlikely in an undergraduate class.

To get started, go to <http://www.groove.net/downloads/groove> and click on the "Download Preview Edition" button. Although it says preview edition, it is a fully function version with no time limit but is limited to 3 spaces.

### Warnings

The most difficult part of using Groove is getting started. Also, it is currently only available for Windows machines.

### Resources

The KSU Collaborative Technology Faculty Learning Community has also created a simple getting started document available at:  
<http://fp.dl.kent.edu/colltech/groove/index.html>

## IM/Chat

### Description

Online Communications

In general, online communications can be divided into two major types: synchronous and asynchronous. Synchronous communications are those that, like a telephone conversation, occur in “real time,” and all parties to the discussion must be online simultaneously. Asynchronous communications are more like playing chess by mail: the “moves” of each participant are taken by an individual without reference to whether the other participants are online at that moment. There are several options within each category.

### Synchronous Communications

Synchronous communications have the widest array of possibilities at the moment, ranging from textual instant messages between just two people, to video and audio that goes out to a group.

#### Text

##### Instant messaging

Usually, Instant Messaging refers to send short text message between two people on the Internet. Recent versions of many IM programs now make it easy to form temporary chat rooms among three or more people (see below). Using IM between just two people for educational purposes often involves a teacher and student communicating, as in online office hours, for example.

#### Chat

Chat extends Instant Messaging from two people to groups of people. There are several kinds of chat programs available.

##### Text Chat

Text chat usually consists of a box in which you type your messages and a log window that holds a running record, in chronological order, of everything that people in the chat room have typed. There may be other information displayed as well, such as a list of who is in the room, an indication of who is currently typing, and other things. Participating in a chat room involves scanning the log to see what other people are saying and typing as quickly as possible, often with little attention to the niceties of spelling, punctuation, and grammar. Emoticons and a variety of standard abbreviations help many people minimize the time they spend typing.

##### 2D Graphical Chat

Some chat rooms go beyond the pure text format described above and add images that can make chat rooms look like rooms (or just about anything else) and the people look like people (or dragons or a variety of other real and imagined characters). In a two-dimensional room the background is a picture of some sort, such as a photograph or a drawing, and the participants appear as characters called avatars on top of the picture. Usually the messages that participants type appear in balloons (think comics) next to the avatar, as well as in a log window similar to a pure text

chat. In many such environments, people can move from room to room, holding conversations with the people they find there. The Palace is a classic example of a 2D chat room.

### 3D Graphical Chat (Virtual Reality)

The next step beyond a two-dimensional chat room is a three-dimensional environment. There are a variety of online games now that combine 3D environments with textual communications. There are also some 3D virtual reality environments that are not games but simply ways to create a setting and communicate within it. One example is Active Worlds, which is being used in some educational settings, including KSU's College of Education. In it, participants can move around a 3D environment and talk to people they meet there. They are represented by avatars which can perform simple movements and gestures. Messages appear as text above an avatar's head as well as in a pure-text log window. Users may also build new structures in the environment.

### Asynchronous Communications

Should there be text here to go along with the synchronous????

### Guidelines

Instructors can use text chat in a variety of ways. We have found that it is definitely possible to go well beyond the usual social chitchat found in chat rooms to have meaningful educational conversations among faculty and students. Instructors might use a chat to answer questions from a class (or subset) or they might divide a class into small groups, sending each group off to a different room to solve a problem, discuss an issue, or role play.

Some guidelines:

- Chat rooms do not work well with large groups. A class of twenty can be very hard to handle in a chat room, so the instructor needs to keep some control and have a structure for the class, such as taking questions about specific topics at specific times.
- The optimal small group size in a chat room seems to be about 3-5. Larger groups seem to splinter in several smaller ones that hold overlapping (and confusing) conversations.
- Small groups need specific tasks and activities to perform in their chat rooms, and they need to be held accountable for some kind of results.
- Online chats in classes can be much more difficult and draining than face-to-face classes. They seem to work better if they are kept somewhat shorter than traditional classes.

### Warnings

Maybe something here about being a fast typer????

### Resources

<http://www.thepalace.com>  
<http://www.albertingram.com/palace/>  
<http://www.activeworlds.com/>

## **Listservs**

### **Description**

A listserv (the name is spelled that way because early programs had to have names with eight characters or fewer) is an electronic mailing list. Individuals can sign onto the mailing list themselves or be added by the list manager (usually with a confirmation request). When a message is sent to the list, it goes to the listserv program, which relays it to all the list members. A variety of parameters can be set by the list manager and/or the members, including whether replies go to the entire list or to the original sender and whether a member received each message separately or as a daily digest.

Usually a college or university will run a listserv service for faculty and others who need to communicate with groups of people. In classes listservs can be extremely useful to communicate class administrative information, especially that which needs to go out somewhat quickly. At the same time students must check email regularly, or the communications channel will not be effective. Listservs may be less effective nowadays for substantive class discussions, although some faculty have used them for such purposes. Unlike online discussion boards, listservs do not save the history of the discussion in one place, so that newcomers can catch up with it and participants can review it. Also, since the discussion message appears in ones email Inbox, there is less sense of controlling one's own approach to the discussion.

### **Guidelines**

### **Warnings**

### **Resources**

## **Multimedia Authoring Systems**

### **Description**

Interactive multimedia refers to computer-based programs that combine such media as text, pictures, graphics, animation, audio, and video into unified experiences. The word "interactive" refers to the fact that the best such programs give control over pacing and navigation to individual students. In addition, there are likely to be questions, quizzes, exercises, simulations, or other activities that help the learner become actively engaged in learning. All of these aspects are under the control of complex computer programs. Although multimedia programs can be delivered via CD-ROMs or DVDs, nowadays they are most likely to be delivered via the World Wide Web, using a variety of technologies such as Shockwave, Java, and others.

### Guidelines

A variety of software can be used to create multimedia programs such as Macromedia Flash and Director or various game engines such as xxx. The first step in creating any type of multimedia project is to determine the goals for the experience. Then a timeline is created that describes exactly what will happen during the user's experience.

### Warnings

- Interactive multimedia can be extremely time-consuming and expensive to develop.
- There is usually a high learning curve to the software so learn the software before you try to create your project
- Copyright needs to be obtained for all images and sounds.

### Resources

## Overheads

### Description

Many classrooms are now equipped with overhead projectors, which allow one to prepare materials beforehand and, perhaps, compensate for poor handwriting or drawing ability. The acetate sheets can be produced in a variety of ways.

### Guidelines

A key element in producing and using overhead transparencies is to make sure that they can be viewed by all class members. They should use large enough type for the room and group size and keep the number of words and lines down. Images should be large enough to convey their message and should be directly related to the point being made. Generally changing the overhead every few minutes seems adequate. Overheads should contain the highlights of a presentation, not every detail.

### Warnings

The major pitfalls in using overheads include

- Unreadable slides
  - Font too small
  - Too many words, paragraphs, etc.
- Including too much detail
  - Every minor point
  - Complete quotations, etc.
- Graphics not related to content
- Keeping the overhead turned on without a transparency showing or being discussed.

### Resources

## PowerPoint Computerized Presentations

### Description

The successor to the overhead projector is the almost ubiquitous PowerPoint presentation (there are other programs that do much the same thing but, like Kleenex, the whole category seems to be taking on the name of one particular brand). PowerPoint and the related programs can be used to create acetate overheads, but the program really comes into its own when the presentation is displayed on the computer itself. Usually this will mean that the classroom requires a computer, a screen, and a projector of some sort. Often well-equipped classrooms will have a projector that allows one to connect a laptop, so that you can bring along your presentation on your own computer.

### Guidelines

Many “PowerPoints” are done quite badly, with too much text in too small a font size, gratuitous images or transitions, and other problems. Some important points to remember about computerized presentations are:

- People can’t learn from things that they can’t see. Keep images and text large enough for students at the back of the classroom.
- The visual slides should support your presentation, not substitute for it. The slides should not contain everything, just “notes” for following and learning from your lecture.
- Graphics and other multimedia elements should be related to what students are expected to learn. Gratuitous images may draw attention away from the important content.
- Use special features sparingly. Fancy transitions and sound effects can pall very quickly.

### Warnings

- Avoid reading each slide and keeping your back to the learners.
- Avoid putting all relevant information slides that are then given as handouts. Why attend if all one needs is to get a copy of the slides.
- Avoid feeling compelled to cover every pre-made slide – watch your audience and follow their lead. Unlike overheads, there is no expense associated with creating PPT slides that are never viewed.

### Resources

For more information see Walsh and Pretti-Frontczak (2003).

## Interactive Uses and Games

### Description

Ask Kristie to write this???

### Guidelines

Warnings

Resources

## **PowerPoint Producer**

Theresa???

Description

Guidelines

Warnings

Resources

## **PowerPoint / RealProducer**

Description

Real Producer can be used in conjunction with Microsoft Office PowerPoint. Real Producer is a product of Real Media and can be downloaded from the World Wide Web. Its strongest feature is that it enables streaming video to accompany a slide show presentation. An example of a use of streaming video with a PowerPoint slide presentation would be the creation of a tutorial. The PowerPoint would include text, images (photos, clip art) as well as other objects (shapes, lines) that provide the content of the learning. Real Producer would help to create a video to accompany each slide. The video provides learners with a more detailed explanation using audio (voice, or signing in the case of American Sign Language) and through using visual support (video). The combination of PowerPoint and RealProducer creates a timed tutorial with audio and visual support.

The uses of these two products are not limited to the function of tutorials. Another example is to have the RealProducer audio-video component serve as a narration of a story for a language arts class. The PowerPoint would provide the text and/or images for the lesson. The uses of these products are as varied as the disciplines for which it would be used.

Guidelines

Users need to download software from Real, access to a Microphone, and a WebCam

Warnings

Resources

## Smart Board

### Description

“SmartBoards” and similar brands offer new opportunities for improving lectures and presentations. These are a replacement for both projection screens and standard whiteboards. A computer is connected to a projector which projects the contents of the screen onto a special whiteboard. This board is touch-sensitive and serves as an input device to the computer. Thus one can control the presentation of PowerPoint slides by tapping the board, draw on it to create diagrams, or even write text that can be converted to computer-editable text. Slides could be presented and then drawn on them to communicate specific concepts. Any drawings and annotations can be saved to the computer and later distributed to students as notes.

### Guidelines

- ◆ Practice using the SmartBoard before class so that you are not fumbling around with it.

### Warnings

### Resources

Smart Technologies, Inc. is the manufacturer of many “smart” products including the interactive Smart Board. <http://www.smarttech.com/>

SmarterKids Foundation provides grants to assist educators, including higher education, in purchasing Smart Board technology. <http://www.smarterkids.org/>

ED Compass is a resource website for educators using SMART technologies such as tips and tricks, lessons, and case studies. <http://edcompass.smarttech.com/>

## Test Generators, Online Quizzes / Tests / Surveys

### Description

### Guidelines

### Warnings

### Resources

## Video

### Description

Videotapes (or, nowadays, DVDs and streaming video from the Internet) have also become a staple technology to support classroom presentations. Documentaries, movies, short clips illustrating animal or human behavior, and many other types of content can

enliven a class or display important information that cannot be conveyed in any other way.

#### Guidelines

It is important, when using video to make sure that the material can be seen and heard well by all class members. That means that the monitors or projection screen must be large enough for the size of the room and class. A single 19" television set is adequate only for a small seminar. A large lecture hall with a couple of hundred students needs much more: a large projection screen or even multiple screens. Second, the audio is important. In some cases, where people are being interviewed, for example, the audio may be much more important than the video. Therefore, it is vital to ensure that it is both loud enough and free of distortion.

#### Warnings

#### Resources

### DVDs

#### Description

DVDs are the newest way of storing and distributing video materials (and other data) to people. Many of us have DVD players in our homes and often DVD players or recorders in our computers. Simply playing pre-recorded DVDs is no different from using other recorded video in your classes. Nowadays, with digital video and DVD recorders, it is possible to create your own videos and store them on these silver disks.

#### Guidelines

- ◆ Be sure to follow the guidelines above for displaying any video to ensure that your audience can see and hear it.
- ◆ The guidelines for producing your own video also apply here, since the biggest change is simply that DVDs hold more content.

#### Warnings

Copyright laws do apply to prerecorded videos, even when used in educational settings.

#### Resources

See the KSU guidelines on copyright.

### Video/Multi-Media

Multimedia offers that possibility of presenting complex ideas in ways that are much clearer than words alone, even when supplemented by poorly drawn graphics on a chalkboard or whiteboard.

#### Digital video

### Description

The advent of affordable digital video cameras and relatively easy to use editing software has brought the instructional use of video within reach of most teachers. We are not limited to the tapes and DVDs we might purchase or rent on specific topics. Now we can produce materials ourselves to meet our instructional needs. This will take some time, however, so it is important to choose the right topic, objectives, content, etc.

### Guidelines

To make your own digital video for classes you will need several things:

- Digital video camera (often these can be borrowed from such places as the fpc) and microphone (if the built-in microphone is not sufficient).
- A high-end computer (with a firewire capture card) running one of the available digital video editing programs, such as Adobe Premier, Vegas Video, iMovie, or Final Cut Pro.

### Warnings

- Capturing, editing and outputting your movie takes time.
- Storing captured footage requires a large hard drive, or the use of removable hard drives

### Resources

## WebQuests/CaseQuests (Kristie???)

### Description

### Guidelines

### Warnings

### Resources

## Student Assessment

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Student assessment will vary depending on the specific goals, objectives, and activities chosen by the instructor. We recommend that paper-and-pencil tests *not* be central to the assessment strategy and that more direct means be found. Here are some possibilities:

- The development and delivery of a technology-supported presentation that meets a set of criteria for both the presentation and the technology use.
- The development of a small website meant to support the learning of key concepts and skills.
- The design of a lesson that integrates one or more technologies effectively.
- The development of a spreadsheet as an electronic grade book.
- The development and tryout of a WebQuest.
- Facilitating an online discussion that furthers the attainment of some instructional goals.

Rubrics would probably be needed for most of these activities to help ensure fair, impartial, and accurate grading, as well as useful feedback.

# Applications

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## Sample Activities for Learning Skills in this Module

### Basic Concept Activities

- Discussing the advantages and disadvantages of integrating technology
- Researching what is known about the effectiveness of distance education using various technologies
- Applying specific learning and teaching strategies to technology

### Technology Use Activities

- Basic
  - Using Word or Publisher to create course materials
  - Using FrontPage or Dreamweaver to create a website
  - Creating a PowerPoint presentation
- Intermediate
  - Using Groove in a class for a semester
  - Creating simple multimedia presentations
- Advanced
  - Creating interactive multimedia

### Technology Integration Activities

- Choosing technologies that support different learning objectives and audiences.
- Creating WebQuests that are aimed at specific learning goals.

## **Case Studies**

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Put text here

## **Examples**

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Put text here

## **Scenarios**

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Put text here

## **Adaptation to the Discipline**

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Put text here

## References

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Educause: <http://www.educause.edu/>

The Technology Source: <http://ts.mivu.org/default.asp>

Bimonthly, peer-reviewed online journal on integrating technology into higher education instruction

Syllabus: <http://www.syllabus.com/>

Emoderators resources: <http://www.emoderators.com/moderators.shtml>

Using spreadsheets for grading: <http://www.ucalgary.ca/~rzach/teaching/grades.html>

ERIC CRIB (Critical Issues Bibliography) Sheet on Technology in Higher Education:  
<http://www.eriche.org/crib/technhe.html>

### Books

O'Neill, H. F. and Perez, R. S. (2003). *Technology applications in education: A learning view*. Mahwah, NJ: Lawrence Erlbaum.

Jonassen, D. H., Peck, K. L., and Wilson, B. G. (1999). *Learning with technology: A constructivist perspective*. Upper Saddle River, NJ: Prentice-Hall.

Murphy, D., Walker, R., and Webb, G. (2001). *Online learning and teaching with technology: Case studies, experience, and practice*. London: Kogan Page.

## **Specific Teaching Methods**

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### **Creating a Course Website**

<http://www.stwing.upenn.edu/~abstein/guide/guide-intro.html>

#### **FrontPage**

<http://www.microsoft.com/education/?ID=FrontPageTutorial>

#### **Dreamweaver**

<http://www.trainingcafe.com/members/coursesite/index.asp>

#### **Flash**

<http://www.bellaonline.com/articles/art4356.asp>

### **Discussion Boards**

<http://cit.duke.edu/resource-guides/AssessDiscussionBd.html>

<http://www.newcastle.edu.au/discipline/sociol-anthrop/staff/kibbymarj/online/interact.html>

<http://www.concord.org/newsletter/1999winter/speakingvoices.html>

<http://www.concord.org/newsletter/2000fall/face2face.html>

### **Document Cameras**

#### **Groove**

<http://fp.dl.kent.edu/colltech/groove/index.html>

<http://www.groove.net/>

#### **IM/Chat**

<http://www.thepalace.com>

<http://www.albertingram.com/palace/>

<http://www.activeworlds.com/>

#### **Listservs**

<http://kerlins.net/bobbi/technology/web101/listserv.html>

<http://helpdesk.kent.edu/faq/Listserv/>

### **Multimedia Authoring Systems**

#### **Overheads**

#### **PowerPoint**

**PowerPoint (interactive uses, games)**

**PowerPoint/Producer**

#### **Smart Board**

<http://www.smarttech.com/>

<http://www.smarterkids.org/>  
<http://edcompass.smarttech.com/>

**Test Generators, Online quizzes/tests/surveys**

<http://www.auburn.wednet.edu/homepages/ilalko/testlinks.htm>  
<http://www.questiontools.com/adexam.html>

**Video****DVDs****Video/Multi-Media****WebCT Vista**

<http://helpdesk.kent.edu/top/WebCT/>

**WebQuests/CaseQuests**

<http://webquest.sdsu.edu/>  
<http://webquest.org/>  
<http://school.discovery.com/schrockguide/webquest/webquest.html>  
<http://www.ozline.com/webquests/intro.html>  
<http://projects.edtech.sandi.net/staffdev/buildingblocks/p-index.htm>

## Key Books

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