Course 12: Learning and Adapting New Technologies
Learning and Adapting New Technologies

Skill Standard:  I. Learn and adapt new technologies

Key Activities:  
11. Obtain and maintain certification on program-specific technology.
12. Maintain current knowledge of technology in the field.
13. Identify, evaluate and implement emerging technologies according to industry needs.

Editor’s note: This curriculum should accommodate the full range of instructional and industry-specific technologies available to professional-technical college instructors. Though not specifically itemized as one of the key activities in the original skill standards, Information Literacy, has been added to this course as a necessary component to an instructor’s full education. Sufficient complexity and depth in this course will allow the facilitating instructor who teaches this course to adapt assessments and activities to individual instructor-learners based on their individual needs and goals.

COURSE DESCRIPTION:

Most recently, adapting to technology has been a standard mandate for all professional-technical programs and for all college instructors. To offer students the best chance for professional success in their working lives, today’s instruction requires state-of-the-art technology and instruction that utilizes the communication and teaching tools currently available. Instructors find themselves learning and adapting to their industry’s technological needs and to their own as classroom instructors. In this course, the instructor-learner will identify, evaluate and implement new and emerging technologies according to industry needs and per their needs as instructors. Instructor-learners will develop new ways of communication and develop online materials and websites.

Working with their program advisory committee, the instructor-learner will maintain current knowledge of technology in the field and focus on how to integrate this new technology into their curriculum, into their current methods of delivering student instruction, and into effective ways of assessing student learning by integrating new technology into student assignments. Information Literacy is a natural byproduct and requirement of such immersion into technology. Today’s instructors are aware that they must foster such literacy for their students. As needed, the instructor-learner will develop the skills required to research, organize and maintain information about certification requirements for program-specific technology.

LEARNING OUTCOMES: The instructor-learner will...

- Identify and evaluate new and emerging technologies relevant to their technical program and industry and demonstrate proficiency in applying and teaching these skills in the classroom.
- Incorporate new and emerging technologies into existing curriculum, outcomes, and assessments and implement new technology into program according to its relevance, effectiveness and long-range implications.
• Adapt instructional activities and the learning environment by utilizing current instructional technology to maximize learning.
• Successfully manage the process of obtaining, maintaining and upgrading program-specific technology skills and maintaining current industry certifications.
• Develop new communications systems and processes, including email, online materials, and a website, as applicable.

OUTCOMES ASSESSMENTS:
• Review and evaluate Instructor-Learner and Student-Learner technology self-assessment results to help determine what technologies are appropriate for courseware integration.
• Develop a long-range professional improvement plan regarding technology and technological needs of the program, including a plan to complete certification requirements as needed.
• Develop a written personal technology improvement management plan, and give proof of attendance within the past school year at a seminar, workshop or course in technology.
• Obtain, organize, and maintain certification requirements by accurately documenting and properly submitting materials to certifying bodies.
• Integrate new technology into current method of delivering student instruction.
• A website, online materials and email are consistent communications tools for the instructor.
• Produce a written listing of 25 program-specific resource materials.

KNOWLEDGE AND SKILLS: The instructor-learner will:
• Compile and regularly update a list of program-specific technology workshops, seminars and courses available.
• Maintain regular contact with industry experts, colleagues, and advisory members as resources on emerging technology.
• Design new assessments and outcomes to align with new technologies to interpret student progress.
• Create a plan to implement new technical skills and knowledge into curriculum.
• Compare and contrast syllabi and tests for objectives relating to the incorporation of new technologies.
• Modify existing curriculum materials to adapt to relevant emerging technologies as appropriate.
• Integrate new technology into student assignments.
• Assess student progress with new curriculum and outcomes in a timely and effective manner using a student progress and record-keeping system.
• Create a personal improvement plan based on required courses, certification needs and availability.
• Attend workshops, courses, seminars and professional organization functions in current and emergent technologies.
• Cultivate and participate in return-to-industry opportunities.
• Use current technology to organize all current certification information.
• Compile and update regularly a list of certification requirements using technology resources to include the Internet and industry contacts.
• Complete an annual report on certification trainings, availability and cost.
• Outline procedures for documentation and filing procedures.

**PERFORMANCE INDICATORS:**
• On-going research is conducted for relevant information related to emerging technologies.
• Advisory committees and professional affiliations/organizations are consulted on a regular basis.
• Technologies are accurately and thoroughly assessed for appropriateness and currency.
• New technologies are effectively and efficiently incorporated into existing curriculum, outcomes, and assessments.
• Continual assessment of student progress with new curriculum and outcomes is performed in a timely and effective manner.
• Current research and development on relevant technologies are continually reviewed and communicated.
• Technology seminars, workshops, courses and professional meetings are consistently attended with full participation.
• Current professional literature regarding emerging technology applications is selected and consistently read.
• All applications and documentation for a personal technology improvement plan are submitted.
• Instructor-learner actively pursues and participates in return-to-industry opportunities.
• Recommendations regarding emerging technologies are solicited from advisory committees and industry employers.
• All applicable certification requirements are organized in an accessible format.
• All appropriate activities for certification are accurately, completely and effectively identified.
• Accurate documentation is maintained according to certifying body’s requirements.
• Proper documentation is submitted according to the requirements of the appropriate certifying body.
• Certification reviews for compliance are scheduled regularly.
• Anticipated changes to curriculum are planned and assisted.
<table>
<thead>
<tr>
<th>Essential Content</th>
<th>Discussion Topics and Key Ideas</th>
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<tbody>
<tr>
<td>New writing skills</td>
<td>• Writing for the web-wider audiences</td>
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<td></td>
<td>• Not just adding fancy graphics or importing pages</td>
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<td>New technological opportunities/challenges</td>
<td>• Teaching distance education classes using Internet and www.</td>
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<td>• Evaluating information found on the Internet</td>
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<td>• Web video conferencing</td>
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<td>• Online course development and delivery</td>
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<td>• Ethics, including copyright related to new technology with special note of distance education issues</td>
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<td>• Adaptive technologies for students with special needs</td>
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<td></td>
<td>• Use of electronic grading -Excel, Thinkwave, etc.</td>
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<td>• Use of the Student Management System (SMS) to access rosters, student test scores, grades, class schedules, etc.</td>
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<td>• Use of Web management system (Instructor Briefcase) to submit grades, check rosters, etc.</td>
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<td>• Use of digital camera for use in presentations, web authoring, publications, etc.</td>
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<td>• Use of rewriteable CDs and video camera for development of instructional materials</td>
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<td>• Use of projection screens to deliver oral presentations</td>
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<td>• Use of video conferencing for both student and faculty presentations.</td>
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<td>Technological fluency</td>
<td>• Information skills and literacy</td>
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<td>• Communication skills and technological skills</td>
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<td>• Multimedia and having students develop multimedia portfolios</td>
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<td></td>
<td>• See Information Literacy and Washington Colleges attached.</td>
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<td>Technology and the design of instruction</td>
<td>• Consideration of face-to-face (f2f) efficacy</td>
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<td>• Impact on instructors</td>
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<td>• Use of technology affects</td>
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<td>• Criteria for presentation of content</td>
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<td>• Design of presentaton, etc.</td>
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<td></td>
<td>• See Technology and the Design of Instruction attached.</td>
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<td></td>
<td>• See also related support materials attached.</td>
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<tr>
<td>Social skills, networks, and the dangers of cyberspace</td>
<td>• “Having students develop “appropriate social skills for networks” ranks last among the aspirations faculty have for their students in using the new technology. For anyone who’s been “flamed” or experienced any of the thousand forms of time-consuming and draining misunderstandings that cyberflesh is heir to, this ranking seems oddly naive. But, in fairness, it wasn’t all that low-52%. In time, everyone will learn the social dangers of cyberspace and perhaps that lesson will serve to re-enforce what we know about the importance of social networks in learning in general.” [Cited directly from Ed Nuhfer, in the National Teaching &amp; Learning Forum, Vol. 5, No. 6, 1996, p. 8.]</td>
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<td>Support implications for new technologies</td>
<td>• Review all the assumptions about the student before going down a new technology path</td>
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<td>• Identify students’ access and proficiency with technology and software</td>
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### Essential Content  
**Emerging instructional media**
- Laptop computers
- Voice recognition software
- Video and digital cameras
- Document and image scanners
- LCD projectors, SmartBoard Technology
- Videoconferencing
- Presentation software such as PowerPoint, Visio, Toolbook, Flash etc.
- Distance and online learning

| Use of online course tools such as WebCT or Blackboard to integrate course materials | Class handouts and lecture notes  
| Resource links |  |

| Creating and maintaining a web site | Using a web editor or course tool  
| Importing graphics and information about the program, instructor, students, resources, etc. | Integrating into the college’s website |

### SKILLS and/or LEARNING ACTIVITIES: The instructor-learner will be able to:

- Modify curriculum to reflect changes in emerging technology, including developing appropriate outcomes and assessments for student learning.
- Manipulate and analyze technological innovations for the learning environment, including funding of new equipment and materials.
- Research and access a listing of available technology seminars, courses, and workshops by using the Internet, listserves, professional organizations and literature, colleagues, advisory board members and industry experts.
- Develop a written management plan for technology certification standards.
- Demonstrate a lesson utilizing current technology

### TECHNOLOGY OVERVIEW and PROFESSIONAL DEVELOPMENT

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<thead>
<tr>
<th>Essential Content</th>
<th>Discussion Topics and Key Points</th>
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</table>
| **Technology self-assessment** | Why is self-assessment important prior to beginning to integrate technology into the curriculum and student assignments?  
| Determining proficiency with technology tools such as: word processing, spreadsheet, database creation and management, presentation tools, email, online Internet resources, library sciences (information literacy) |  
| See: [http://www.ga.unc.edu/21stcenturyschools/reports/techplan_appendixB.html](http://www.ga.unc.edu/21stcenturyschools/reports/techplan_appendixB.html) Basic Technology Competencies for Educators Self-Assessment Tool |
| **Online communication** | Advantages and disadvantages  
<p>| Open ended questions | Online documents |</p>
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<th>Essential Content</th>
<th>Discussion Topics and Key Points</th>
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<td>Online resources</td>
<td>• What are they?</td>
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<td>• Where do you find them</td>
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<td></td>
<td>• Computing services departments</td>
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<td>• Internet, listserves</td>
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<td>Industry contacts</td>
<td>• Cultivating advisory committees</td>
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<td>• Professionals and organizations</td>
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<td>• Using as resource in classroom</td>
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<td>• Guidelines</td>
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<td>• Develop strategic partnerships with appropriate technology-based businesses</td>
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<td>New curriculum application opportunities</td>
<td>• Including in new curriculum</td>
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<td></td>
<td>• Self-assessment</td>
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<td>• How to incorporate these effectively</td>
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<td>Assessments and Outcomes</td>
<td>• Tracking systems</td>
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<td>Professional literature</td>
<td>• Research sources</td>
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<td></td>
<td>• Vendor publications</td>
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<td></td>
<td>• Internet, search engines</td>
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<td></td>
<td>• Professional listserves</td>
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<td>Contacts</td>
<td>• Industry experts, colleagues</td>
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<td>• Cultivating advisory committee members</td>
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<td>Personal/professional improvement plan</td>
<td>• Documentation and forms</td>
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<td>• Self-advocacy</td>
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<td>• Updating one's skills and the plan</td>
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<td>Technology opportunities</td>
<td>• Research workshops, seminars</td>
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<td>• Professional organizations - how to join</td>
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<td>Return-to-Industry</td>
<td>• How and where to cultivate</td>
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<td>• How to recognize</td>
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<td>• Documentation and paper trails</td>
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<td>Certification requirements</td>
<td>• Research certification resources</td>
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<td>• Specific industry requirements</td>
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<td>Documentation considerations</td>
<td>• Maintenance needs management</td>
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<td>• Personal certification upgrades</td>
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<td>• Availability and cost</td>
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<td>• Organization and checklists</td>
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<td>Technology management plans</td>
<td>• Personal performance plan</td>
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<td>• Managing technology needs</td>
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<td>• Managing expected proficiency levels</td>
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<td>• Finding availability and cost</td>
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<td>Submitting materials</td>
<td>• Who is the certifying body?</td>
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<td>• Reporting formats</td>
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<td>• Deadlines</td>
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<td>Update considerations</td>
<td>• On-going need to upgrade</td>
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<td>• How do we keep up with technology?</td>
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</table>
LEARNING ACTIVITIES:

- Participate in an Instructor-Learner and Student-Learner technology self-assessment prior to integrating new technologies into curriculum and student assignments.
- Conduct on-going research to identify program-specific relevant emerging technology needs and requirements.
- Demonstrate understanding of current and emergent technology to create:
  - Program web page,
  - Online syllabus, online assignments, online grades or
  - Threaded discussion area for student project teams or
  - Information sharing area; posting student work, online critiquing
- Integrate new technology into current method of delivering student instruction.
- Integrate new technology into student assignments.
- Give a “before and after” example of how to change a current program-specific project or assignment currently to incorporate a new technology skill.
- Update the assessment process for the changed assignment or project.
- Create an email distribution list to contact students, industry contacts or advisory members.
- Compile a current list of online resources for online communication development.
- Create an online advisory committee listing to include participant names, institution, job title, address, email and term of appointment.
- Create a list of ways to use advisory members effectively in virtual and on-ground classrooms.
- Research technology seminars, courses and workshops for developing a professional improvement plan and share with class.
- Attend a seminar or workshop on emerging technology and submit a plan to incorporate new skills and information into program curriculum.

Use Internet, listserves, industry contacts and advisory members to research and complete:

- Produce a sample personal self-improvement plan to include rationale and plan to incorporate emergent technology into program curriculum.
- Compile a list of professional literature or periodicals related to emerging program-specific technology and explain the informational benefits to the program.
- Select and read current professional literature about emerging technology.
- Create a list of currently available program-specific emergent technology workshops, seminars and courses to include the benefits to the program.
- Contact and interview 3-5 industry experts or advisory members regarding current technology skills needed in the program-specific industry.
- Develop a list of return-to-industry contacts and possibilities to include projected availability and program-specific benefits.
- Produce a sample of a technology management plan
- Document current certification information using current technology.
- Compile a list of resources to check updated requirements, including Internet links, industry contacts, etc.
- Complete a list of certification trainings, availability and cost.
- Develop a checklist for all required documentation and filing procedures to complete certification requirements as needed.
SUPPORT MATERIAL: These materials are compiled at the end of this course:

- 9 Scenarios for Aiding Faculty in Determining Technology Challenges Facing Their Department
- Assorted Activities to Create HTML Documents for the World Wide Web
- Information Literacy and Washington’s Colleges
- Technology and the Design of Instruction
- Teaching Technology from Experience While Letting Students Drive
- Exciting News from eCollege
- Writing HTML
- Technology Training Solution Training Workshop Request [http://www.abacon.com]
- Best Practices for Online Distance Learning (Presentation)
- “Getting Started with Microsoft Certification”
- ICSA Professional Certification Program
- Investigation Towards a Model of Professional Development of Educators in the Use of Technologies at a Technical College

PRIMARY TEXTS/RESOURCES:

- Integrating Computers in the Curriculum (video). Scottsdale, AZ: Teacher’s Video Company, 33 minutes [1-800-262-8837]

ADDITIONAL READINGS/RESOURCES:


Milliron, Mark D. and Cindy Miles, eds. *Taking a Big Picture Look @ Technology, Learning and the Community College*, League for Innovation in the Community College, 2000.


**WEBSITES:**

*Suggested Internet search words: online learning, discussion groups, email*

http://www.bloomhomepagelink: Advanced web sites and links to many helpful websites on a huge variety of topics such as online course delivery, videotaping in the classroom, WebCT, Web page design, writing learning objectives, learning styles, instructional design models, adult learning, etc.
Articles and a sampling of additional links from the Bloom home page:
http://www.duq.edu/~tomei/tomei/advancedsites.html  Bloom home page link
http://illinois.online.uillinois.edu/model/Studentprofile.htm  What Makes A Successful Online Student?
http://www.ed.gov/databases/ERIC_Digests/ed351008.html  Strategies for Teaching at a Distance by Barry Willis
http://www.educationau.edu.au/archives/cp/REFS/reeves.htm  14 Pedagogical Dimensions of Computer-Based Education by Dr. Tom Reeves
http://www.thejournal.com/magazine/vault/a810.cfm  Preparing an Instructional Lesson Using Resources Off the Internet by Dr. Lawrence Tomei
http://www.valdosta.edu/~whuitt/psy702/plan/behobj.html  Writing Behavioral Objectives (also includes links to Bloom's Taxonomy, goals, assessment, and lesson plans)
http://www.unl.edu/teaching/PlanningCourse.html  Planning a College Course (Syllabus/Course Description)
http://www.firstmonday.dk/issues/issue4_12/hara/index.html  Students’ Frustrations with a Web-Based Distance Education Course (N. Hara & R. Kling) (36 page article)
http://www.thejournal.com/magazine/vault/A2089.cfm  Leveraging Student Feedback to Improve Teaching in Web-based Courses
http://www.ga.unc.edu/21stcenturyschools/reports/techplan_appendixB.html  Basic Technology Competencies for Educators Self-Assessment Tool

SUGGESTED INTERNET LINKS FOR: online course development and course management
http://www.waol.org
http://www.waol.org/info
http://www.washingtonOnline.org/info/faculty/04/csDevelopment.html
http://www.washingtonOnline.org/info/faculty/04/csMgmt.html
http://www.academic.com  Technology-mediated instruction and learning
http://www.academic.com/courses  Online course materials for entry-level Mathematics and English
http://www.academic.com/news  News and information about technology

SUGGESTED INTERNET SEARCH WORDS: online learning, discussion groups, email
http://www.eCollege.com  Online training partners
http://www.waol.org  Washington online classes on developing online training
http://www.lifelonglearning.com  News, articles and books about distance learning
http://www.mcli.dist.maricopa.edu/tut/  Writing HTML
http://www.ctt.bc.ca/  Educational programs, technology news, consulting services
http://www.listbot.com/  Create a discussion group free and get free homepages
http://www.everythingemail.net/  Email and glossary tips, how to join discussion groups

SUGGESTED INTERNET SEARCH WORDS: Emergent technology, online training
http://www.ecollege.com  Online training partner with colleges and universities
http://www.waol.org  Washington Online classes
http://www.nttinc.com  Emergent technology training classes held nationwide
http://plbsun01.ouhk.edu.hk/comtech  Online emergent technology publication
http://uhavax.hartford.edu/~hiltech  Faculty technology workshops resource
http://www.usubscribe.com/category.cfm?page=3&CFID=837299&CFTOKEN=8432748&sid=1  Subscribe to IT and emergent technology publications
SUGGESTED INTERNET SEARCH WORDS: MOUS certification, IT certification, certification, online learning.

- http://microsoft.com/mcp/
- http://www.LeanITSoftware.com/
- http://www.visual-basic-computer-training.com/computer_training.html
- http://www.mous.net/
- http://www.officecert.com/
- http://members.aol.com/jkozdon
- http://coriolis.com
- http://www.waol.org
- http://ecollege.com
- http://icsa.com

SUGGESTED INTERNET SEARCH WORDS: listserves

- http://www.hearlihy.com Curriculum design materials and services
- http://www.catalog.com/vivian/interest/group-search.html Mailing list database
- http://www.egroups.com/ Start a mailing list
- http://www.theberries.ns.ca/Archives/Listserves.html
- http://www.abacon.com Interactive technology training solutions
- http://stylespub.com Textbooks and conferences

ADDITIONAL WEBSITE LINKS:

- http://web.ctc.edu/CTC_cust_svcs/et&t/orientation/index.htm Access campus resources
- http://web.ctc.edu/CTC_cust_svcs/et&t/index.htm Distance Learning information and resources
- http://hednet.polyu.edu.hk/ The National Teaching & Learning Forum:
- http://www.sas.com/edu/OIS/ Cornell Office of Instructional Support: (under construction but with additional links)
- http://itc.cit.com/edu/EducRes.html Cornell Education Technology Center
GLOSSARY: for Learn and Adapt New technologies Course

ADL - advanced distributed learning
backbone - a high-speed line or series of connections that forms a major pathway within a network. The term is relative as a backbone in a small network will likely be much smaller than many non-backbone lines in a large network.
backup - copy program or files to safe location
bandwidth - how much stuff you can send through a connection. Usually measured in bits-per-second. A full page of English text is about 16,000 bits. A fast modem can move about 15,000 bits in one second. Full-motion full-screen video would require roughly 10,000,000 bits-per-second, depending on compression.
boot - start the computer; loading the operating system in a computer
  (cold boot or hard boot - turn machine off and then back on)
  (warm boot or soft boot - reset the machine without turning off the power)
client - any computer system that requests a service of another computer system. A workstation requesting the contents of a file from a file server is a client of the file server.
client and server - place where the parent software resides that clients connect to
cookies - text files stored in a computer after a visit to a web site
courseware - software designed to develop and/or deliver instruction
drive - long term storage device, local and network; also contains folders and files
  (local drive - on the user's computer; network drive - on the file server)
firewall - software or hardware protection system for a network; If you want to protect any networked server from damage (intentional or otherwise) by those who log in to it, you put up a firewall. This could be a dedicated computer equipped with security measures such as a dial-back feature, or it could be software-based protection called defensive coding.
folder - contains files and other folders
freeware - software that is free, usually available online
FTP - file transfer protocol (a method of transferring computer files between two linked computers)
GUI - (pronounced gooey) graphical user interface; the pictures on a screen as opposed to plain text
html - hypertext markup language adapted for the Internet
hypertext - text that can be linked to other texts on the Internet
information literacy - ability to identify, evaluate and use information
LCD - liquid crystal display (as in LCD slide projectors that connect to computers)
LMS - learning management system
meta-search engine - search engine that hooks on to higher level categories
multimedia - use of sound, graphics and text to deliver content
netiquette - behaviors, protocols and basically etiquette on the Internet
network infrastructure - supporting hardware (servers, cables, client, routers, switches, etc.)
peer-to-peer - a simple, small type of network in which each workstation has the ability for equivalent capabilities and responsibilities. Each station can be a server and each can be a client at the same time. This differs from client/server architectures, in which some computers are dedicated to serving the others. Peer-to-peer networks are generally simpler and less expensive, but they usually do not offer the same performance under heavy loads.
**port** — place where printers, monitors, or other peripherals can be connected to the computer

**proxy server** — a common server to hook up to the Internet

**router** — a special-purpose computer (or software package) that handles the connection between 2 or more networks. Routers spend all their time looking at the destination addresses of the packets passing through them and deciding which route to send them on.

**scorm** — shareable content object reference model; standard to develop online learning objects

**server** — A hardware device that is the central point, or one of them, for a network. There are many servers on the Internet. Files for each Internet site are stored and executed on the server. While there are many different types of servers, they share the common job of providing access to files and services. Some servers only handle mail or only files, while others do more than one job. They are attached to the network by an interface that may be a true network or by telephone line connection.

**SmartBoard** — digitized whiteboard for graphics

**shareware** — software available on the web for a minimal fee

**TCP/IP** — transmission control protocol/Internet protocol; rules that allow computers talk to each other

**threaded discussion** — collection of messages and discussion for online learning

**web authoring** — to develop web content

**webinar** — seminar on the world wide web or Internet

**workgroup** — set of computers that belong to a common interface

**URL** — uniform resource locator

Support Materials for Course 12: Learning and Adapting New Technologies
9 Scenarios for Aiding Faculty in Determining Technology Challenges Facing Their Department,
Submitted by Greg Stiles, Spokane Community College, Spokane, Washington

1st Scenario: You are a vocational instructor recently hired at a community college. The Dean has asked that you oversee the advisory committee for your department. How do you approach the topic of new technology for your program?

2nd Scenario: You are a vocational instructor and your department recently developed curriculum for a new degree to be offered to students. The Dean has asked that you develop an advisory committee to help guide faculty in developing new curriculum, be aware of new technologies and to prepare students for entry-level positions.

3rd Scenario: You are a new instructor at a community college. The software in the computer lab has not been updated for quite some time. Your Dean has asked that you determine which software programs are necessary and which ones are not.

4th Scenario: You are an instructor at a smaller community college. Your department budget has been cut. In order to keep up with industry standards, you will need to develop a survey to determine which technologies are being utilized by employers in the area.

5th Scenario: You are a computer instructor at a community college. The technology keeps changing and your textbooks are outdated quickly. In order to meet industry needs, you need to develop an ongoing process to make sure that students are accessing current technology and information.
Assorted Activities to Create HTML Documents for the World Wide Web
by Greg Stiles, Spokane Falls Community College, Spokane, Washington

Scenarios:
- **First Scenario:** You are a new instructor at a community college. The department chair has asked that you update the course material on the web server.
- **Second Scenario:** You are an instructor at a smaller community college. Your department budget is dwindling and your copy shop budget has been cut in half. The Dean has asked that you look to alternative electronic methodologies for meeting course needs.
- **Third Scenario:** You are a computer instructor at a local community college. The textbook you recently ordered is now out of date due to a recent update to the computer software. In order to provide your students with the most current information, you develop web pages with links to online resources.

Tasks:

Create html documents by using an html page editor provided by the college.
- (Example: FrontPage Editor, Netscape Composer)

Create hyper links that:
  a) link to outside resources
  b) link to self assessment sheets
  c) link back to program area
  d) enable students to email instructor

Save digital files with the appropriate names and file extensions by:
  a) adding .htm when saving HTML files
  b) adding .jpg for JPEG files
  c) adding .txt for text files (Examples: index.htm, photo1.jpg or information.txt)
  d) creating naming conventions that would help a user if they were doing a “find file” command
  e) making them short so that the URL (uniform resource locator) is not too long
     - Poor Example: http://www.internationalbusinessmachines.com/humanresourcesdepartment.htm
     - Better Example: http://www.ibm.com/hr.htm

Create and link PDF documents by:
  a) using various page layout programs such as MS Word or PageMaker
  b) choosing the “save as PDF file” utility
  c) adding .pdf file extension

Organize digital documents by:
  a) saving files in the correct course folder
  b) saving files using sub folders
Create or Use visual imagery by:
a) using a digital camera
b) using clip art
c) creating imagery using a drawing or paint program

Upload html documents to a server by:
a) communicating with the college Web Master
b) logging on to the server using FTP (file transfer protocol) software recommended by the Web Master

d) communicating with colleagues

Find resources to solve technical problems by:
a) using the software help menus
b) textbooks
c) online resources
d) communicating with colleagues

<table>
<thead>
<tr>
<th>Suggested Discussion Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>What advantages are there to having online materials?</td>
</tr>
<tr>
<td>How can online resources be utilized in the classroom?</td>
</tr>
<tr>
<td>What are some disadvantages to online resources?</td>
</tr>
<tr>
<td>How can online resources be used for student assignments?</td>
</tr>
</tbody>
</table>
Information Literacy and Washington’s Colleges

Information presented by Kim Nakano, Green River Community College and Marie Zimmerman, Highline Community College at an Instruction Commission meeting May 17, 2001

Information Literacy:
- Determine what information is needed
- Access the information
- Evaluate the information critically
- Use the information effectively

How is Information Literacy Different than Library Instruction?
- Broader, all encompassing
- Applicable to all disciplines
- No longer place-bound
- Infused throughout the curriculum
- More than computer literacy
- Usually librarian not involved in the use of the information

Association of College and Research Libraries (ACRL)
Information Literacy Competency Standards for Higher Ed. Approved Jan 2000
Objectives for Information Literacy Instruction Approved Jan 2001

What does it mean for a librarian to be involved in instruction?
Information Literacy in Action
- What do I want the student to be able to do? (Skill)
- What does the student need to know in order to do this well? (Content)
- What activity will facilitate the learning? (Learning Activity)
- How will the student demonstrate the learning? (Assessment)
- How will I know the student has done this well? (Performance Criteria)

Connect with Faculty:
- Create partnerships with faculty.
- Participate in Faculty Development.

Resources:
www.ala.org/acrl/intro.html - Competency standards for higher education

Why is Information Literacy Important?
Focus on students:
- Knowledge as a product to learning as a process
- Rote skills to problem-solving
- Multiplicity of formats

Accreditation:
Regional commissions requiring information literacy competencies

Distance education issues:
Use of email and online discussion groups; Remote access to information

Ethics is a part of Information Literacy:
Plagiarism
Transferability: • 4-year schools are beginning to require this as a specific competency
• Seamless approach with high schools

SCANS: Information literacy is workforce requirement.

What’s Next?
Common platform for resource sharing among colleges
Providing common online resources
Understanding that knowledge is product of the college
Library provides Access
Instruction: Evaluate the information and apply it

Technology And The Design Of Instruction
Notes from three stateside technology retreat sessions synopsized by Ann Suter in 1997

The need to “design” instruction when using technology forces the faculty member to be:
• Learner-center
• Outcome-oriented
• Tuned into the technology have-nots
• Considerate of student access to technology cognizant of a variety of technologies.

One aspect of design is consideration of “Face-to-face” efficacy as well as how to achieve it.

Use of technology affects:
• spontaneity
• interactions
• discussion synergy
• recognition of the “teachable moment”
• pacing of instruction/pacing of student learning and timing of instruction/timing of student
• learning development of instructional activity
• collegiality
• outcomes desired
• testing practices
• assessment practices

Use of technology is affected by:
• student readiness to use technology available
• distribution of technology and network current classroom practices
• faculty readiness to use technology outcomes desired

Is there a difference in design of instruction/design of learning for the classroom versus distance education?

We need to use multiple modalities to present, to interact, to assess, to remediate, to impact different learning styles and levels of readiness. We need to impact multiple senses. We need criteria for presentation of content (presentation should be “rich”):
• learner-to-learner
• teacher-to-learner
• technology-to-learner
• engagement with content (engagement should be “rich”)
• whole human being
Design of Presentation, Engagement and Interaction should not be Internet along:
- text
- video
- audio
- audio interactive
- video interactive
- computer interactive CD-ROM

Criteria:
- Criteria to determine efficacy should be whether learners achieve outcomes based on good assessment and testing standards.
- Need to have cross college agreement on what a course means in terms of what students know and what can they do as a demonstration of mastery.
- Need to research the efficacy of design to mastery and instructional guidance to mastery. (What does the design versus instruction have to do with outcomes?)
- Need to judge these attributes against a traditional campus class. There should be an overarching concept of an “instructional guidance system.”
- Are we preparing students to be self-structured and motivated in the learning tasks?
- We need to take care about choosing assessment as it affects the outcomes desired.
- Do we have measuring tools for assessment of mastery? for measuring self-actualization? (Are AA students “ready” to be life long learners across a spectrum of disciplines?)
- We need to design pre and post tests.
- We need to consider student goals along with course/curriculum/college goals.
- Can we build learner “contracts” to express all levels of outcomes desired?

Instructional Design, Integrity And Teamwork

Need to distinguish between curriculum design and course instructional design and development? (Still begs the question of curriculum design but for the purposes of this meeting to establish quality course educational standards, we chose to focus on course design and development.)

Should we be imitating the classroom? Or is course design different for distance education? (The group determined that we SHOULD NOT IMITATE THE CLASSROOM, that design should focus on learning outcomes.)

Design integrity should allow us to:
- alter sequence (diversity of sequence)
- communicate with and among students
- clearly distinguish between faculty control and student control (define faculty control of content)

However, many faculty, while having intellectual tools, do not have knowledge or skill with technological tools. Departments should be responsible for curriculum outcomes, while faculty design courses for course outcomes. The Internet is only one component of a “distributed education.”
A model for the team:

- design specialist < -> subject content specialist
- use multiple tools and instructional formats

- engagement with content to develop faculty (can be more than one)
- engagement with cohorts/other students (could be other places)
  for time and/or place independent learning

Course (and curriculum) design should be developed with the following team members:

- content specialist
- computer: network, text development, WEB specialist
- hardware and software counselor
- registration specialist
- financial aid/graphic/video media specialist
- instructional design specialist
- community resource specialist (marketing)
- librarian

Design should not be beholden to technological imperative (Internet, MS Office, Interactive video). Design should not be driven by technology verses learning needs and outcomes.

Steps preparatory to instructional design:

- understand student needs, understand student options
- clarify links to learning components (collaborative learning)
- clearly defined outcomes for curriculum and courses and well-developed technology components
- staff and faculty readiness
- criteria for student-centered instruction
- analysis of expenses verses expected outcomes
- Instructional design and development expenses as well as operating expenses need to be assessed relative to resources available and outcomes expected.

Construct of current AA curriculum may not lend itself well to a quality distance learning model without further work on:

- curriculum design
- collaborative learning
- learning communities
- articulation to further education

- We need to team with four-year schools to systematically develop theory to practice
- Expense of design and development necessitates consortial activity
- Emphasis on use of technology for distance learning and improved quality of campus based education may cut out students who are:
  - physically disabled
  - technology poor
  - technology illiterate.
• We should develop a regional approach to services: access to technology and support services.
• How should we “chunk” learning? (credits, hours, blocks, TESC)
• Use of modules which can be offered over different time formats: (weekend; semester; quarter; year). Should we be hardwired to time?
• Is amount of learning relative to seat time/study time?
• Competency can be measured in three steps:
  • pre-assess
  • challenge to next level
  • assessment of performance.

• Who will drive these changes?
• How can we carry these out in an integrated fashion?
• How do we reduce duplication of effort?
• How can we insure more than modest gains for extraordinary investment?
• Are we too invested in the status quo?

**Quality of interaction:**
• Interaction is: feedback, verbal exchange dialogue, Q&A, non verbal exchange, student team communication
• Written interchange may require student reflection
• Interactions should be designed to achieve outcomes
• We need a book of tricks to elicit interaction for different kind of disciplines

**Kinds of interactions:**
• peer teaching
• peer review
• team projects
• oral quiz
• chat/discussion/seminar
• socratic dialogue

• How do classroom interactions differ from Distance Education interactions?
• What is the best model for learning? asynchronous vs Synchronous conversation

**Interaction serves the following goals:**
• aid to movement through content
• setting and clarifying expectations
• development, diversification and enhancement of understanding modeling/mirroring procedures
• assessment and testing feedback
• dialogue
• teacher/student analysis of people environment

Interaction should be developed out of design activity

Quality interaction promotes student learning and progress to outcomes as well as providing an environment for human exchange.
Distance Learning: How Does It Measure Up?

This article is reprinted by permission from Magna Publications which publishes The Teaching Professor from the March 2000 issue. Subscription and submission information at dharvill@magnapubs.com.

Distance learning is the educational phenomenon of the 90s. Prior to its time, there were correspondence courses, TV/video courses, and an occasional independent study done via phone, mail and/or periodic meetings. But the advent of online capabilities has without question brought distance learning from childhood to adulthood in less than 10 years. Everybody knows what it is; some folks are wholesale converts, and most institutions now do courses (if not whole programs) online.

That makes questions about its effectiveness as a learning method not only timely but essential. Jamie P. Merisotis and Ronald A. Phipps have recently undertaken a review of the literature on the effectiveness of distance learning. They limited their review to materials published during the 1990s. What they found is noteworthy: "It turns out that the vast majority of what is written about distance learning is opinion pieces, how-to articles, and secondhand reports that don't include original research with subjects (students or faculty) who are being studied." (p. 13)

They decided to focus on original research and found about 40 studies that looked empirically at student outcomes including grades and test scores, student attitudes about learning in the context of distance learning, and overall measures of satisfaction with the distance learning experience. And they found that "most of these studies conclude that, regardless of the technology used, distance-learning courses compare favorably with classroom-based instruction and enjoy high student satisfaction." (p. 13)

However, the authors have serious concerns about the quality of the research standing behind that conclusion. They list a number of basic empirical shortcomings, like not controlling for extraneous variables, not randomly assigning students to the different treatments (distance learning vs. regular classroom instruction), instruments questionable in terms of validity and reliability, among others.

In addition to questions about the quality of the research, the authors proceed to point out a number of key gaps in the research that also impact the conclusion as it now stands. We'll mention several here. First, almost all the research on distance learning has been done on individual courses. Almost nothing has been done on the whole programs taught via distance learning. How do on-line programs compare with and to the on-campus programs?

Second, the research is not very good at addressing individual differences between and among students. These differences (like gender, age, educational background, motivation) are known to have an impact on learning outcomes, but in the distance learning research so far they are amalgamated into averages that lump all learners together.

Third (seven gaps are identified in the article), research so far focuses mostly on the
impact of individual technologies rather than on the interaction that occurs when multiple
technologies are used, as they frequently are in distance leaning.

Distance learning is here to stay and research does lag behind practice. But before too
many claims are made about what and how learning occurs when the classroom is on-
line, the conclusions of these authors should be kept in mind. The research and literature
reviewed for this paper indicate that the higher education community has a lot to learn
about how, and in what ways, technology can enhance the teaching/learning process,
particularly at a distance.” (p. 16)

Reference: Merisotis, Jamie P. and Phipps, Ronald A. (May/June 1999). What’s the

The Tools and Techniques of Technology

This article is reprinted by permission from Magna Publications which publishes The Teaching Professor from the
March 2000 issue. Subscription and submission information at dharvill@magnapubs.com.

Even those of us who still love to hold books and read a paper copy of a newsletter must
keep up with the ways and means that technology can have a positive impact on the
learning of our students. A fine resource (referenced below) delineates a plethora of
electronic enhancements from what are claimed to be “America’s 100 most wired
campuses.” It includes an overview that neatly categorizes a wide range of techniques.
May we recommend that you use the condensed list and an occasional example to make
you wonder if any of these techniques merit exploration in your own class.

For interactive learning, use technology for:
• Simulations, Team projects
• Student Web pages
• Student publishing on the Web: The publication of student papers on the Web can
  expedite the peer review process and improve the quality of the paper.

For increased communication, use technology for:
• Web pages for course material: Create a Web site that includes everything from the
course: syllabus, course calendar, course goals, assignments, study questions, etc.
• Email: group and individual
• Asynchronous discussion groups: Let the discussion continue after class as people
  have time to reflect and respond more thoughtfully to the ideas and insights of others.
• Synchronous chatrooms
• Office hours on line
• Consultants and experts in discussion
• Hyperlinks to related materials
• More time for class discussion

For customization, use technology for:
• Virtual courses
• Self-paced lectures, exercises, quizzes
For **new material and modes of presentation**, use technology for:

- Citations to the Web (URLs)
- Web searches by students
- Electronic textbook
- PowerPoint and/or multimedia presentations
- Archives of images; collections of slides and photographs can be scanned more easily manipulated and more permanently stored in the computer.
- Computer skill exercises
- Lecture notes online

For electronic class **management**, use technology for:

- Feedback from students; at several designated times during the semester, have students check in and offer feedback as to how things are going.

Organized by disciplines but cross-referenced by the electronic techniques listed above, this reference contains 93 vignettes outlining specific ways the techniques were developed and used. The vignettes include pithy points about lessons learned.


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**Teaching Technology from Experience While Letting the Student Drive**

*By Joseph Silverthorn, Integrated Multimedia Faculty/Coordinator, Olympic College, Bremerton, WA*

Yes! This is a scary topic for a lot of teachers...it is called “mentoring.” It is scary because the weight of the class structure falls on the student and not the teacher. It also forces the teacher to admit (to himself and others) that he does not know all the answers. If one is honest these days, with the swift advances to technology and communication innovations, one has to admit not being able to keep up with everything. Students will enter a class knowing a lot more than the teacher on some subjects. So, what does a professor do when confronted with a high school student taking classes in college who knows more than the class as a whole and the professor as well?

Do not panic! Mentoring out of one’s own experiences and using the collective knowledge base of the class to advance all in the class can be turned from a nightmare into a real enhanced learning opportunity. Instead of having one’s own pride demolished, students can teach each other and assist each other for merit in the class. Insist that it is expected of them for their grade and they are being monitored to see if they do this.

Teamwork is a key incentive to motivating students to help each other instead of competing against each other. This also offsets the student who would challenge the teacher. The teacher also learns and advances from the knowledge brought forth in this environment. It is safe for a student to ask a question that the professor does not know the answer to as the teacher can honestly admit, “I don’t know, but we can find out!”
Students will respect honesty because they know technology is advancing at a pace no human can possibly keep up with in our rapidly evolving world. Creating an honest atmosphere in a class is a good thing as it allows freedom to explore things and view them from many angles. It also allows a rich learning environment to exist. Gathering input from the experience that students have and capabilities they may have gathered can allow them to share that which may have been shut out otherwise. All students come equipped with experiences and capabilities that can enrich the group as a whole. Why not use these resources as well?

Teamworking does not necessarily mean all the students work on one project together. This is counterproductive as a few students end up doing all the work and all the students get only pieces of the whole action. If everyone has to come up with his or her own project and teamwork entails skill sets that can be shared, people are motivated to finish their own projects and will learn the skills needed to get their projects done. They will learn a wider range of skills than if they are required to only do a part of a project.

Have students present their projects in front of the other students in the class. Stress that communication skills and the ability to defend their individual strategies are important as well as reconsidering items seen from other views that may come up in critiques of their work.

When testing, stay away from fill-in and multiple choice tests. These may be easier to grade, but they do not create long-term memory. Create essay tests that pull the key elements of what has been taught out of the student's mind. Make them develop answers that they can not memorize the night before and eject right after they do the test. Make them be creative. Make them use sentences and spelling and imagination. Pull their minds, and work them like taffy.

Also, advance the theory of “proactivity” in the class. This is showing students how to research and find answers on their own. This skill is a real eye-opener to students who have been told what to do to get a grade for so long they are no longer thinking people but are doers who jump through hoops. Employers like people who can think through assignments and don’t have to be led along by the hand and told what to do all the time.

Show students how to help themselves. Most software comes with “help” attached that can answer most questions concerning the software in use. There are tutorials and books that explain how to do procedures. Show them how to do research to find out answers to their questions. Hands-on instructions and the time to utilize them are so important when it comes to computers and software. Classes that show “where the buttons are” are okay, but that can truthfully be learned at home by a dedicated user. People who want to learn computer programs must have the time to sit at the computer and do things. Talking about theory for hours on end will go in one ear and out the other. Working out a problem on the keyboard and having to figure it out may take a bit longer, but it sticks in the head. When it comes to computer applications, do not talk about it so much as do it with a hands-on approach.
Exciting News from eCollege
Excerpted from New eCollege_Site@news.ecollege.com  March 29, 2001

The goal of eCollege is to provide you with a single location to keep abreast of the expanding world of eLearning as well as administer eLearning for your students. Just as the world of eLearning is constantly evolving, the eCollege website is also evolving.

The eCollege site is an access point for your courses and has a separate “Campus site” dedicated solely to the administrating and hosting of your trial courses. The content on this campus is focused on the needs of the educators who are utilizing one or more of eCollege’s Teaching Solutions and for students that are benefiting from their professors using these eLearning tools. The eLearning Campus includes:

• Updates and News from eCollege about new eLearning products and solutions.
• Quick access to eCollege’s educator’s resources including Educator’s Voice.
• Tools for students to enhance their eLearning efforts.
• A marketplace with links to a variety of online retails.
• Frequently Asked Questions to help you and your students with any questions they may have with the course.

From this campus you can login and administer all of your courses via My eLearning Campus. Since the eLearning Campus is your campus, be sure to bookmark the eLearning Campus site as your new home for your courses. If you forget to create the bookmark, don’t worry that you will never be able to access your course. The new eCollege home page has a link to the eLearning Center, so if you or any of your students go to the eCollege site to access their courses, they will only be a click away from the eLearning Center.

We value and honor the relationship between educator and student, so we will purposely not inform any students who are enrolled in courses running from the eCollege site about changes to the site. We will use our eNewsletter to communicate changes to educators and we recommend that you email your students and inform them any new changes or updates.

We invite you to explore the eCollege site and the eLearning Campus.

Writing HTML: A Tutorial for Creating Web Pages
This is a project of the Maricopa Center for Learning and Instruction (MCLI). Writing HTML was developed by Alan Levine, instructional technologist at the Maricopa Community Colleges. Our former intern, Tom Super, provided invaluable instructional design support. Many others have given helpful suggestions, corrected typos, and expressed their thanks! Reprinted with permission.

WRITING HTML W AS CREA TED to help teachers create learning resources that access information on the Internet. Here, you will be writing a lesson called Volcano Web. However, this tutorial may be used by anyone who wants to create web pages. You can get a sense of the results by looking at our illustrious alumni and kudos or what people say about the tutorial.
By the time you have reached the end of this tutorial, you will be able to construct a series of linked web pages for any subject that includes formatted text, pictures, and hypertext links to other web pages on the Internet. If you follow the steps for the Basic Level (lessons 1-14), you will develop a page about volcanoes, and if you go on to the Advanced Level (lessons 15-29), you will create an enhanced volcano web site.

For faster performance, you can download an archive of all files used in this tutorial. Most of the lessons can be done off-line. If you are having trouble connecting to this site, try our experimental servers, Jade or Zircon, but please be nice to these machines; they are doing other work for us.

**Why Create Web Pages? If you’ve come this far, you likely have an answer.**

**THE WEB IS BECOMING AN INTEGRAL PART** of our working (and playing) world. You cannot spit anymore these days without hitting a URL (if you do not know what a URL is, you will find out here). In a very short time span, the web has revolutionized the way we access information, education, business, and entertainment. It has created industries where there were none before.

Being able to develop information on the web might be a job skill, a class requirement, a business necessity, or a personal interest. Unlike any other previous medium, the ability to “write” HTML allows you to potentially connect with millions of other people, as your own self-publisher.

**IN THESE LESSONS YOU WILL:**
- identify and use different HTML formatting codes.
- create and modify HTML documents using a simple text editor.
- write a series of web pages that present information, graphics, and provide hypertext links to other documents on the Internet.
- And maybe you will have some fun!

**What is HTML?**

*HyperText Markup Language*

**PUT MOST SIMPLY, HTML,** is a format that tells a computer how to display a web page. The documents themselves are plain text files (ASCII) with special “tags” or codes that a web browser knows how to interpret and display on your screen.

This tutorial teaches you how to create web pages the old-fashioned way — by hand. There are software “tools” that allow you to spin web pages without touching any HTML. But if you are serious about doing more than a page or two, we believe a grounding in the basics will greatly accelerate what you can do.

Everything you create in this tutorial is designed to run from any desktop computer; it does not depend on access to a web server or specialized computer programming.

**YOU WILL ALSO NEED A TEXT EDITOR PROGRAM** capable of creating plain text files e.g. SimpleText for the Macintosh or NotePad for Windows. We strongly urge that you use the most basic text editor while you learn HTML and then later you can explore HTML “editors.”
you use a word processor program, then you must save your files as plain ASCII text format. You should also be familiar with switching between multiple applications as well as using the mouse to copy and paste selections of text. If you download the tutorial files, you can do nearly all of the lessons off-line.

We suggest that you proceed through the lessons in order, but at any time you can return to the index to jump to a different lesson. Within each lesson you can compare your work to a sample file for that lesson. Each lesson page has a link to a concise summary of the tags as well as links to other reference sites.

For convention, all menu names and items will be shown in bold text. All text that you should enter from the keyboard will appear in typewriter style.

**Keep in Mind**

Some pointers to help you out, since we will never admit knowing everything.

a. Use the Favorites or Bookmark feature of your web browser to mark the lesson index page so you can easily navigate to other lessons.

b. We’ve aimed to write instruction generic to (almost) any web browser; sometimes the menu names or features may not match the web browser you are using.

c. This tutorial will show you how to create web pages that can see outward to the world. It will not tell you how to let the world see them; to do this you need to locate an Internet Service Provider that provides web server space. Try http://thelist.internet.com/ or http://www.webisplist.com/. Also, you can search for a free web page hosting service from Freewebspace.net

d. Creating pages is one thing; designing web sites is another. We cannot highly enough recommend the Yale C/AIM WWW Style Manual, Sun Microsystem’s Guide to Web Style, and the Sevloid Guide to Web Design.

e. When you are ready for the big time, see web pages like you have never seen web pages at Dave Siegel’s Casbah and High Five sites. Trudge on over to his Web Wonk to get the details. It will amaze you.

f. Refer to the HTML tag summary page as a reference. You can get to it by following the hypertext link at the top of every lesson page.

g. If you are having trouble, see the Writing HTML FAQ (Frequently Asked Questions) before writing us for help. We get lots and lots of email. Too much.

Once your web pages become available on the Internet, please list them on our Writing HTML Alumni page using our registration form.

- Thanks to some great volunteer efforts, Writing HTML is also available in other languages:
  - Spanish / Español v3.0 (thanks to Arturo García Martín and Andrés Valencia) \n  - Icelandic / Íslenska “Nämsefnsíger í HTML” v 4.5.2 (thanks to Gudjon Olafsson)
  - Korean v4.5 (thanks to Dr. Byeong choon Lim, Department of Computer Education Chunceon National University of Education)
Learning and Adapting New Technologies

CURRICULUM GUIDE: LEARNING AND ADAPTING NEW TECHNOLOGIES

- Italian "Corso di HTML" v4.5.1 (thanks to Cristiana Cavicchi)
- Japanese v 4.0.' (thanks to Kazuaki Mizota)

**Time to Get Started!**

**IF YOU ARE READY,** go to the index of lessons or go directly to the first lesson. Happy webbing. And have fun.

Writing HTML. [http://www.mcli.dist.maricopa.edu/tut/](http://www.mcli.dist.maricopa.edu/tut/)  04/14/01

Any questions should be directed to: Alan Levine at alan.levine@domail.maricopa.edu.

**Getting Started with Certification**

Transcript of a presentation available for viewing at Microsoft Seminar Online [www.microsoft.com/seminar](http://www.microsoft.com/seminar)

**CONTACT INFORMATION:**

Microsoft Certified Professional  email: mcp@msprograms.com
Microsoft Certified Professional  telephone: 1 (800) 636-7544

Are you interested in beginning or advancing your career in the IT industry?

This presentation will show you how becoming a Microsoft Certified Professional is one of the best ways to demonstrate to your employer, clients, and colleagues that you are qualified to get the job done and move ahead as a computer professional. I’ll show you how the demand for computer professionals is growing worldwide, and how you can help fill that need by becoming Microsoft certified. I’ll describe what the Microsoft Certified Professional program is. I’ll summarize the benefits to you and your organization when you become certified. Finally, I’ll explain the steps to earning certification and how you can get started.

The IT industry is growing at an incredible rate.

A recent study by the Information Technology Association of America reveals that 346,000 information technology jobs are currently vacant in U.S. companies, leaving one in 10 jobs unfilled. Microsoft estimates that among 13,000 companies that are Microsoft Certified Solution Providers, more than 41,000 technical jobs are open worldwide. This trend is continuing. The U.S. Commerce Department reports that between 1996 and 2006, America will require more than 1.3 million new computer professionals, such as systems analysts, computer scientists, engineers, and programmers.

What does this mean for you?

If you’re thinking of moving into the exciting profession of information technology, great opportunities are waiting for you. And if you already work in the industry, it’s an ideal time to enhance your career.

In either case, one of the best ways to show an employer or client that you have the necessary knowledge and skills for the job is to become Microsoft certified. Microsoft certification enables computer professionals to assess and demonstrate their software-related skills. The exams measure the ability to perform specific job functions.
Microsoft offers six certifications in the following areas:

An entry-level certification on a Microsoft operating system, systems engineering, solutions development based on Microsoft development tools, and specialties in advanced Internet technology.

Choose the certification that is right for you:

- The Microsoft Certified Professional credential, which is considered the basic track leading to a premium certification, requires passing one operating system exam.
- Microsoft Certified Systems Engineers design, install, support, and troubleshoot information systems.
- Microsoft Certified Solution Developers use development tools and platforms to create business solutions.

Two credentials are for professionals who specialize in the Internet:

- The entry-level Microsoft Certified Professional + Internet credential, and
- The premium Microsoft Certified Systems Engineer + Internet certification.

We also offer a Microsoft Certified Trainer credential for instructors.

The Microsoft Certified Professional program offers many benefits, including:

- Industry recognition of your knowledge and proficiency with Microsoft products and technologies.
- Access to technical and product information directly from Microsoft through a secured Web site.
- MCP logo and certificate to enable you to identify your Microsoft Certified Professional status to colleagues and clients.

Other benefits may also apply, depending on the certification. Through certification, organizations can maximize the return on investment in Microsoft technology. Research shows that Microsoft certification provides organizations with:

1. Increased customer satisfaction and decreased support costs through improved service.
2. Increased productivity and greater technical self-sufficiency.
3. An excellent return on training and certification investments by providing a standard method of determining training needs and measuring results.
4. A reliable benchmark for hiring, promoting, and career planning.
5. Recognition and rewards for productive employees by validating their expertise.
6. Retraining options for existing employees so they can work effectively with new technologies.
7. The assurance of quality when outsourcing computer services.

These are the steps to earning a Microsoft certification:

1. Choose the certification that best matches your career goals or job tasks.
   The MCP Web site lists the exams required for each certification.

2. Get an Exam Preparation Guide from the Web site for each exam you plan to take.
   The exam prep guide lists the skills measured by the exam and training resources that map to the exam.

   To ensure you have the skills and knowledge necessary to pass the exams, you may want to use the many training resources available, such as: Instructor-led Microsoft Official...
Curriculum courses offered by Microsoft Authorized Technical Education Centers. Self-study guides and training kits are offered by Microsoft Press and independent courseware vendors, and online training is offered by independent training providers.

3. Use and know the Microsoft product you are learning. Hands-on experience is a prerequisite for passing an MCP exam.

4. Take a practice test, which gives you the opportunity to answer computer-administered questions that are similar to those on the certification exam. Free practice tests are available for download on the MCP Web site. Each certification exam takes about an hour to an hour and a half. You may take the exam at any of more than 1,400 testing centers worldwide.

Are you ready to boost your career by getting Microsoft certified?

Then take the next step. Find out more about the Microsoft Certified Professional program by visiting our Web site http://www.microsoft.com/mcp/, sending us email at mcp@msprograms.com or calling our customer assistance number (1-800-636-7544). Thank you for your interest in the MCP program.

How to Incorporate New Technologies into the Curriculum

Adapted by Jan Lunak, TLCF Institute Director, from “Incorporating New Technologies into the Curriculum” by Greg Stiles, Instructor, Spokane Falls Community College, Spring 2001

Emerging technologies must be used to enable faculty and students to develop new ways of communication. There is a new constant need to seek alternative methods of communication with students, and also for students to communicate with each other. A new professional-technical instructor must be able to incorporate more diverse yet program-specific online communication into the program, thus reaching a greater population of learner. There is an ever-pressing need to create web pages at the level found on the college web server, develop online syllabi, develop links to online resources, write PDF documents, develop and use distribution lists and create a threaded discussion area. In addition to institutions offering online and distance learning, professional-technical instructors must develop the expertise to develop online communication within on-ground programs.

The following are examples of scenarios where this technology can and must be incorporated:

First Scenario:
You are a vocational instructor recently hired at a community college. Your students are currently working on a research project. In order to provide access to the research materials, you develop a threaded discussion.

Second Scenario:
You are an instructor at a community college, you recently handed out the latest assignment. Unfortunately a student was unable to make the class session and asks you for the assignment as you are walking down the hall. Knowing that the material has been posted to the web, you
simply ask them check the course home page.

Third Scenario:

You are a Liberal Arts Instructor who feels that further discussion of a specific topic is necessary for student clarification. You point the students to the threaded discussion area and ask the students to discuss the topic further online outside of class.

Fourth Scenario:

You are an instructor and have recently been approached by a large corporation looking for students interested in completing an internship. Using an email distribution list, you are able to contact students and alert them to the internship opportunity.

Areas of suggested concentration:

1. Use email effectively by...
   a. Using the email client to sort and file incoming mail by subject heading or email address.
   b. Alerting students to how often you will be checking your email.
   c. Alerting students to the fact that you may not be able to respond to every email.
   d. Using the “out of the office” assistant function of the email client to alert students of your availability.
   e. Creating a course distribution list using the “personal address book” function of your email client.
   f. Using course distribution lists to send one email to all students.
   g. Attaching pertinent digital documents for review by the students.

2. Create course distribution lists by...
   a. Having students send you an initial email at beginning of the quarter.
   b. Using the initial email to create a course distribution list of all of the students in a particular course.

3. Create online course materials that...
   a. Are easily accessible to all students.
   b. Have links to resources.
   c. Provide ways for students to move forward on projects or activities.
   d. Show due dates and time lines.

4. Create links to resources for students that...
   a. Demonstrate a skill.
   b. May answer a students question.
   c. Do not need extra browser plug-ins.

5. Develop threaded discussions by...
   a. Working with the Web Master or the Computing Services Dept. of your college.
   b. Developing open-ended questions related to the field or current topic.
   c. Incorporating the threaded discussion area into the course assignments.

6. Create and link PDF documents by...
   a. Exporting digital documents as PDF files.
b. Uploading PDF files to the server and then linking them to the web page.

7. Upload html documents to a server by...
   a. Communicating with the college Web Master.
   b. Logging on to the server using FTP (file transfer protocol) software recommended by the Web Master.
   c. Using the correct file extension.

8. Find resources to solve technical problems by...
   a. Using the software help menus.
   b. Researching textbooks.
   c. Using online resources.
   d. Communicating with colleagues.

**Required Resources:**
- HTML Editor (MS FrontPage, Netscape Composer)
- Email Client (MS Outlook, Eudora, Netscape mail)
- Web Server / Throaded Discussion area.

**Listserves**
by Urban Breen, http://www.theberries.ns.ca/Archives/listserves.html

The use of Listserves is perhaps the most convenient method for people who share a common interest in a particular topic to exchange opinions and discuss issues of mutual concern. A listserver is a program that maintains one or more of these mailing lists. It automatically distributes an email message from one member of a list to all other members on that list. When you subscribe to a list, your name and email address is automatically added to the list. You will receive a standard letter of welcome (via email) telling you about the list and other information to help you effectively use the list.

Messages sent to the “list” are forwarded to all subscribers within 5-10 minutes (depending on the number of subscribers on the list — a few up to several thousand), thus enabling a “discussion” to take place in a timely fashion if desired. On the other hand, any messages sent to the “list” will be waiting for subscribers whenever they download their email at their convenience.

Should a private message to a member of the list be desired, all one has to do is reply to the individual who posted a message and NOT to the list. It should be noted that more than one embarrassment has arisen out of errant messages.

Most lists are public in the sense that anyone can join. Not all those who join a list actively participate but rather simply read the postings made by others. This frequently occurs when one is newly subscribed and tries to determine the tone of the list.

It is also possible (and sometimes desirable) to have a “private” or restricted list.” In this case, it is not possible to subscribe to the list in the normal way. Only the Administrator of the...
Listserver can subscribe you. Such an arrangement can be worked out between individual groups and an Internet service provider.

Joining a listserve group is usually a straightforward procedure as the following indicates.

**Subscribing to a list:**
To place yourself on a mailing list, one must first subscribe to the list. Depending on the program which is used to manage the list, the procedure may vary slightly. These steps are usually explained in the accompanying instructions. In all cases, an email message is sent by the potential subscriber to the listserver requesting to be placed on a specific list. The message is brief - one line in the body of the message:

- **Subscribe-list name your name.** e.g. subscribe Berries-Talk Jane Smith
- **Note that your name is not always required by some Listserver programs.**

**Unsubscribing to a list:**
To remove yourself from a list, one must send an email message to the Listserver, NOT to the list itself. This is a common error and one which can annoy other list members. The message is similarly brief - one line in the body of the email message.

- **Unsubscribe-list name your name.** e.g. unsubscribe Berries-Talk Jane Smith

**Subscribing to a list Digest:**
If a list generates a high volume of messages, it is also possible to subscribe to a digest of that list. Rather than receive 30 or 40 separate messages each day, a digest of all these messages is sent in one long email message. The procedure is usually to send another brief message to the Listserver - NOT the list itself - and include in the body of the message.

- subscribe digest-list name. e.g. subscribe digest Berries-Talk

If you were subscribed to the normal version of the list, you are removed from the normal subscription list.

It should again be noted that while listserver programs operate in similar fashion, differences between them may exist.

Participants who subscribe to a list need nothing more than access to a computer which can connect to the internet and an email account provided through an Internet service company such as MT&T Sympatico or I-Star to name but a few, or else provided by one's employer.

There are numerous listerves (over 5000) available to satisfy practically any and all interests ranging from Distance Education to Medicine to Cajun Recipes. A recent search of listerves under the heading “Medicine” yielded 193 separate lists.

While there are many places on the Net to find relevant information regarding listerves, sites which might be useful are Zinter-Links, Tile.Net, and the List Mailing List Directory which provide further resources.
Investigation Towards a Model of Professional Development of Educators in the Use of Technologies at a Technical College

Purpose:
The purpose of this document is to assist a technical college in constructing a model for professional development of teachers in the use of technologies for instructional improvement.

Overview:
For many reasons, there is a growing incentive to use technology in education. Students need to be proficient in the use of technologies in the workplace, technology competencies as basic skills have recently been adopted by the state for two-year colleges, a wider access to education through electronic means is becoming a norm, and increasingly, instructional technology is capable of enhancing learning and teaching. Instructional technology, however, will not transform a college on its own. It must be integrated into the curriculum, aligned with student goals, and used for engaging learning projects. Without very strong staff development, integration of technology will be virtually impossible (Joyce, B. & Showers, B., 1988, p.8). The key to using technology to improve learning is teacher quality. (Rodriguez, B. & Knuth, R. 2000).

There is an unprecedented consensus emerging among researchers and professional development specialists on methods with which to substantially increase the knowledge and skills of instructors (Hawley, W. & Valli, L., 1999, p.127). This new consensus calls for providing collegial learning opportunities which are linked to solving learning and instructional problems. I believe that this type of professional development will lead to a large increase in new ideas, expertise, and critical evaluation of programs. This vision differs radically from current practice in most schools. The principles of professional development design, which I delineate in this report, are supported by the research literature as well as my own investigation.

The issue of professional development of teachers in using technologies cannot separate from professional development in general. Technologies are embedded in learning and instruction, just as they are embedded in our daily lives. Thus, this report, while focusing on technologies, speaks through the general context of professional development. After explaining the methods and results of my investigation, I will briefly summarize best practices for professional development of teachers. I will then list strategies for overcoming barriers to technology integration in the classroom, followed by implications this investigation has.

Methodology:
I collected data with which to inform this report through the following activities:

1. Survey:
   Anonymous surveys were sent to 80 full-time and 35 part-time instructors. Twenty-three percent responded. I questioned instructors on their perceived level of skills with information technologies and in their attitudes towards professional development.
2. **Interviews:**
   I interviewed four full-time instructors and five teacher-trainers who have done training at the college. The questioning focused on teachers’ training needs, their attitudes towards professional development, and existing constraints to more effective professional development practices.

3. **Literature review:**
   I performed a literature review on the topic of professional development with an emphasis on in-service training in technology integration.

**Results:**

**Survey:** Survey results suggest that many of the instructors who responded come from technology-intensive programs. Therefore, it may be biased towards a more sophisticated and perhaps techno-centric view of technologies than exists in general. Respondents rated themselves quite highly in proficiencies with information technology literacies. However, there were several individual responses from non-technology-intensive programs, which indicate that a sizeable group of instructors who rate themselves much lower in these competencies exist.

**Summary of survey results:**
- 88% percent rated themselves as lacking in at least one area of information technology literacy.
- 81% feel a need for some new technology in their classrooms.
- 71% prefer to learn technologies alone.
- 54% prefer to learn technologies with colleagues.
- 62% feel well-prepared to take on new challenges in technologies.
- 69% enjoy or would enjoy working with teams of colleagues building a unit or lesson that translates new technological tools into something to use in their classroom.
- 35% feel that they have had the most success learning technologies through workshops.
- 69% feel that they have had the most success learning technologies through informal tutoring from a friend, relative, or colleague.
- 65% of those who responded to the question; "How have you learned new technologies?" were self-taught, and 36% learned in a class or workshop.
- The top three reasons cited for not obtaining needed professional development in technologies were:
  1. Lack of time
  2. Lack of money
  3. Poor or irrelevant instruction.
- The top three responses for technologies envisioned for classroom use in the future were:
  1. Presentation technologies (ie: PowerPoint, Smartboards, etc.)
  2. Don’t know
  3. Productivity software, learning software, distance learning, class web pages, computers, Internet

**Interviews:**
   The interview results reflected many of the same attitudes towards professional development as the survey, particularly with respect to preferred modes of learning. Many of the instructors and
trainers I spoke to expressed their belief that collaborative, curriculum specific development activities should take place on a departmental level. This type of work is not perceived to be rewarded and is generally done on instructors’ own time. Lack of time was also the number one reason cited in the survey for not obtaining needed professional development.

Another attitude revealed in both interviews and the survey was the perception of isolation under which instructors work. Lack of support for technology integration was also cited as a problem by both instructors and trainers. More positively, the majority of instructors appear confident and eager to use technology in their programs and to pursue learning opportunities towards that end.

**Best practices for professional development: What the research says:**

“Sustained improvement in schools will not occur without changes in the quality of learning experiences on the part of those who run the schools.” (Fullan, M. & Stiegelbauer, S., 1991, p.344).

A large body of research has been performed to investigate effective faculty development models (Gall, M., & Renchler, R., 1985). These studies show that there are identifiable characteristics that contribute to the success of staff-development programs. Joyce and Showers have studied transfer of skills to classroom practice for almost twenty years. They have identified four models of staff development (Joyce & Showers, 1988):

- Theoretical basis or rationale.
- Theory, plus observations of demonstrations by relative experts in the model.
- Theory and demonstrations, plus practice, plus feedback in protected conditions.
- Theory, demonstrations, and practice, plus coaching each other as ongoing, collegial follow-up.

Their most recent analysis showed clearly that the last model has the most effective transfer results (Joyce, B., & Showers, B., 1995):

<table>
<thead>
<tr>
<th>Characteristics of staff development models</th>
<th>Rate of transfer to classroom practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>No peer structure for follow-up</td>
<td>5-10%</td>
</tr>
<tr>
<td>Peer-coaching included</td>
<td>75%</td>
</tr>
<tr>
<td>Whole-school faculties organized into peer-coaching teams for the follow-up</td>
<td>90%</td>
</tr>
</tbody>
</table>

Showers, et. al. (1987) examined the conditions for transference of skills to regular classroom use and found that in order to effectively use a complex model of teaching such as cooperative learning, it takes about twenty-five teaching episodes during which the strategy is used. This kind of perseverance generally requires ongoing peer support and feedback; solo learners generally revert to previous patterns and practices after relatively few trials. Extensive follow-up is critical to integrate new knowledge and skills, but most staff development programs do not support this degree of application.
What is technology integration?
Technology integration implies the application of technology as a tool to achieve improved learning. The degree to which a technology is used to facilitate learning is the true measure of integration, not the complexity or number of technological tools utilized.

Barriers to integration of technology into instruction
Traditionally, technology training has focused on assisting teachers to overcome what Ertmer calls “first-order” barriers; acquiring skills needed to operate the technology (1999). However, training programs must also incorporate pedagogical models of technology use as a way of addressing the more intractable “second-order” barriers; those that prevent changes in traditional perceptions of the teaching-learning process. Traditional classroom culture as well as teachers’ beliefs about the teaching and learning process tend to be challenged when attempts are made to integrate technology into instruction (Ertmer, Addison, Lane, Ross, & Woods, 1999). Having access to and learning how to use technologies does not guarantee their integration into the classroom. This usually requires changes in personal, organizational, and pedagogical dimensions of teaching practice. The more integrated the use of technologies, the more fundamental the changes required (Kerr, S., 1996, p.47). In addition, using technologies effectively requires having a wide variety of teaching approaches (Fatemi, 1999). Complicating matters further, Bradshaw (1997) has indicated that learning about technology is a life-changing event, and that it is qualitatively different than learning other skills. To integrate technologies effectively in education, teachers need practical strategies to deal with these barriers.

Strategies for technology integration efforts: Vision
Not being able to imagine meaningful uses for technology is an initial barrier for teachers. Teachers need a clear vision of how technology will improve learning and teaching before they attempt implementation. They need opportunities to observe models of integrative technology use, to reflect on and discuss ideas with peers and mentors, and to collaborate with others on relevant projects as they try out their new ideas.

Curriculum development and instructional design
“Regardless of how extensively technology is used or how state of the art the technology used might be, any technology integration requires that teachers engage in rethinking and reshaping their curriculum.”

After gaining a vision of technology use in the classroom and an understanding of the possibilities and limitations of technologies, instructors need assistance and practice in identifying areas of the curriculum where technology can enhance instruction or learning. Modifying curriculum in such a way requires that instructors make technology fit with established components of their instructional systems. Such work is best achieved through ongoing, collaborative investigation which focuses on the subject matter and how it is best taught. The main purpose of instructional design is to analyze how to best structure learning activities to help students achieve course goals and objectives. Design and development work gives an all-important authentic context to professional development and embeds learning into the job of teaching.

Collaboration
“Teachers participation in a professional community had a powerful effect on how successfully they were able to adapt their instructional strategies to meet student needs.”
Murphy, C., & Lick, D. (1997, p.13)
Saphier and King (1985) identified three norms of school culture that have the highest correlation with improving student achievement and changing the school environment. They are collegiality, experimentation, and reaching out to a knowledge base. Linda-Darling-Hammond of Teachers College at Columbia University, who has worked extensively with schools’ professional development efforts, recommended in a 1996 report to the National Commission on Teaching and America’s Future that new policies are needed to support student learning to do the following:

- Redesign school structures to support teacher learning and collaboration around serious attention to practice.
- Rethink schedules and staffing patterns to create blocks of time for teachers to plan and work together.
- Organize teachers into small, collaborative groups.

This all points to a need to create environments where teachers collaboratively investigate their own practice by focusing on the curriculum and how it is best learned and taught. The theme of small groups of educators working together to develop programs is consistently repeated throughout the literature on professional development and was echoed by educators’ survey and interview responses. When instructors engage with each other about their use of curriculum, instruction, and instructional technology, they are more likely to critically evaluate their practice and redesign instruction to better suit their students’ needs. This inquiry into practice must tie program goals with curriculum materials and assessment instruments and procedures.

**Implications:**

Like most colleges today, this technical college is at a crossroads in its development. The infrastructure for instructional improvement is now being put into place, technical expertise in information technology services has improved, and a media technician has been hired. Upgrades in library services have been secured. Many instructors, administrators, and staff are eager to work in an environment conducive to excellence in teaching and learning. An important piece of the puzzle which needs to be developed is an atmosphere in which effective educator training can take hold. Professional development can have a dramatic effect on student performance and school improvement if time and support are given for full implementation of a proven approach (Joyce, B.; Murphy, C.; Showers, B.; & Murphy, J., 1989).

Below are key considerations in achieving this goal:

- **Break the isolation of instructors**
  
  Both my investigation and the research literature supports professional development that is focused on ongoing, team-based inquiry into practice and the design and development of curriculum on a departmental level. Further professional development activities should focus on needs revealed through such work. Teachers with valuable instructional expertise remain hidden, benefiting only those students and teachers lucky enough to be in their classrooms or to develop professional relationships with them using stolen time in the hallways. Currently, the “curriculum wheel” is constantly being reinvented, taking up valuable creative energy better spent on improving instruction. A process could be created whereby expected products or results of such efforts are mutually agreed upon and formally outlined, so that instructors and administrators understand their responsibilities to each other. This first point is a major key to increasing the knowledge and teaching ability of instructors.
• **Build instructional leadership**
The research literature has shown that new competencies, standards, assessments and curriculum have little effect on what actually occurs in the classroom. Change will not occur from the top down only. Administrators must provide structure and let teachers and teacher-leaders develop their programs. Growing local experts and expertise to provide leadership should be a priority.

• **Build a collegial environment**
Improvements in practice require an exceptional personal commitment from everyone in an institution. Teachers need to feel a personal identification with the common enterprise of improvement of student learning and an ownership of their programs and the college. Neither monetary rewards, state standards, nor pressure from supervisors will cause lasting change. An environment where instructors feel that their collective efforts will lead to positive changes, and in which innovation, risk-taking, and experimentation are encouraged and rewarded is the only way to bring about substantial improvements in student and teacher learning.

• **Make multiple modes of learning available**
Due to the busy nature of teaching and differences in skill level and learning preferences, instructors need multiple avenues through which to learn technology and technology integration skills. Curriculum development work, departmental meetings, distance learning, consultation with specialists, workshops, and assistance from local coaches skilled in specific aspects of technology or instruction are all possible approaches to development of competencies in technology integration. Instructors should be evaluated in these competencies with an expectation that they achieve some level of improvement each year.

• **Evaluate professional development program based on improvement in student performance**
When evaluating the effectiveness of professional development programs, improvement of student learning should be the measure of success. We should attempt to correlate professional development efforts with improvement in student performance, and offer activities that have proven themselves effective by this determination.

• **Support for integration of technology**
An instructional support center staffed with instructional and curriculum design and technology professionals could provide guidance through consultation, both one-on-one and small-group (departmental). Technology staff could introduce available technological resources and tools, explain limitations of particular technologies and help instructors expand and improve their teaching skills, solve teaching problems, develop courses and course materials, evaluate instructional resources, and identify effective applications for technology.

• **Create a curriculum project approval process**
For the more expensive, labor-intensive curriculum design projects a proposal system would be a reasoned approach to selection of effective projects. A team-evaluation process whereby proposed projects are examined for feasibility, cost-effectiveness, and probability of success in improving student learning would be prudent.
• **Information literacy / Information technology literacy**

Huge amounts of information, often unorganized and of questionable validity, are flooding into our awareness, highlighting the need to become more fluent with information literacies. Resources available through the Internet and various online resources are one example of such information. Information technology literacies should be infused into the teaching of information literacies, as technology is increasingly being used to search for, organize, and produce information. Although instructors self-reported high levels of competencies in IT literacies, my interviews with trainers and experience at the college lead me to conclude that many, if not most instructors are not fluent enough in this area to integrate it into their curriculum and teaching methods. These competencies should be embedded into all appropriate training activities.

• **Access to equipment**

Teachers must be able to experiment and learn both at home and in their classrooms and offices. Seventy-one percent of instructors surveyed agreed with the statement, “I prefer to learn technologies alone.” Many part-time instructors have little or no access to computers with which to communicate with staff and colleagues and develop curriculum.

• **Time**

In a study which asked Teaching Excellence Award recipients (Community College faculty) what they felt were the key issues in the use of technology in instruction, one of the strongest responses was; “It takes a lot of time to do well.” (Milliron & Miles, 1998). The attitude that time not spent in front of students is wasted must be changed. School improvement projects will disrupt existing organization practices, and waivers must be given to deal with these barriers.

Stages of integration of technology by educators have been identified by researchers. Mandinach and Cline (1992) identified four: Survival, Mastery, Impact, and Innovation. Few longitudinal studies have been performed which investigate the growth and development of instructors during technology integration efforts, but an exception, The Apple Classroom for Tomorrow, found that a minimum of three years was required before instructors used the technology to reach the innovation stage; creating new activities or learning environments. Under conditions at most schools, it has been suggested that this process will take five to seven years.

• **Technology equity**

Survey responses indicate that a lack of needed technology is felt in some departments of the college. Perceptions of where technology can benefit learning vary. Subject matter which appears to be nontechnological can greatly benefit by the use of technologies in its delivery. An example of this is language study, where computer-based audio and video learning programs and technologies can enhance instruction and introduce efficiencies into particular parts of the learning process.

• **Communication**

There is a need for formal structures of bottom-up communications at the college. A perception of limitation in this regard now exists. Part-time instructors, nearly 50% of the faculty (as much as 80% in some programs) have little to no infrastructure to support this type of communication. Many have no email access to their own supervisors.
Conclusion

Instructors are more than presenters of information and facilitators of learning. They design learning environments, select and develop curriculum, manage technology resources, counsel students, and contribute both to the governance of the college and to their profession. This cannot be done well in a vacuum. Teaching is a profession whose challenges have been severely underestimated and for which both pre-service and in-service training has traditionally been inadequate. Now, in this “information age”, instructors are being asked to teach higher-level skills and to infuse technology into the curriculum. Without a radical change in professional development, these challenges will not be met. It is an established sociological tenet that complex activities require the development of strong lateral relationships. A learning culture with informal, reflective partnerships and supportive relationships must be engendered. Continuous learning must be a valued and endemic part of the culture of schools and teaching.

Change management experts have stated that a “burning platform” issue, a crisis which focuses attention on a problem, often precipitates major change (Conner, D., 1992). The multiple challenges of under-prepared students, accreditation concerns, and technology integration needs are now creating a prime opportunity for positive change.

I hope that this investigation sheds light on educator professional development and serves to illustrate the nature of institutional constraints to change in education and the complexity of dealing simultaneously with change, technology integration efforts, and competing philosophies of learning and teaching that exist among educators. I would like to thank all the educators who answered my questions and responded to my survey with such openness.
