Connecticut Community Colleges

Effective Teaching Practices for Web-Enhanced, Hybrid and Online Classes

Project Introduction

This document was developed by the Connecticut Community College System's **WebCT Vista Teaching & Learning Team** (a subgroup of the Vista Team). The Teaching & Learning team is principally concerned with ensuring that instructors using WebCT Vista are cognizant of instructional best practices concerning online teaching and learning guidelines and as such was charged with the following tasks:

- Defining best practices in online instruction that align with the system's mission and strategic goals.[1]
- Determining ways to deploy and support these practices system-wide.

The T&L team includes members of all relevant stakeholder groups, including academic deans, faculty members, distance learning managers from both the System Office and the colleges, members of the Center for Teaching, and members of the Academic Information Technology Advisory Committee (AITAC). The team's focus is on creating opportunities and resources that emphasize the ways in which WebCT Vista can be used to enhance learning, teaching, and collaboration that will benefit both students and faculty.

The "Effective Teaching Practices" Guideline Development Process

The guidelines are equally relevant for instructors regardless of whether their course delivery will be in a "web-enhanced" on-ground course section, a "hybrid" course (a course that is taught partially online and partially in a classroom), or a fully-online course.

To develop the **"Effective Teaching Practices for Web-Enhanced, Hybrid and Online Classes"** document for Connecticut Community Colleges faculty, the committee reviewed existing rubrics and best practices documents, websites, and standards. With the increasing use of course management systems such as WebCT/Vista, there is a need to support instructors as they transition from teaching in the face-to-face classroom to the online classroom. The group believed the approach to teaching online should be informed by a clear theoretical framework. Therefore, the group's discussion focused on adult learning theory and research, specifically on constructivist learning theory because its principles align well with the design of asynchronous online learning environments. The National Center for Online Learning Research (NCOLR) currently endorses pedagogical models based on constructivist theories of learning (NCOLR, 2005).

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[1] (Online instruction may be defined as any educational process in which Internet technology is used to facilitate a student's ability to access course content and activities, and to communicate--asynchronously or synchronously--with the instructor and other students.)

The term "pedagogy" encompasses the approach, the methods and strategies, and the underlying epistemology of an approach to teaching. The skills, training, and commitment of the instructor are critical to the implementation of an effective online pedagogy. Online courses require different strategies to present content, interact with students, and assess course outcomes. Ultimately, the approach that will be used by an instructor depends on his or her personal philosophical beliefs about teaching and learning.

The group's goal was to provide faculty with a roadmap that would help guide them through the major pedagogical issues in the process of course design and delivery that would be equally applicable in both a traditional classroom as well as in a fully Internet-based course.

It is our hope that the document that resulted will enhance teaching and learning in our system by helping faculty use WebCT Vista (and other online/Internet-based tools) to develop courses that are learner-focused, promote active learning, guided discovery, and the construction of new knowledge, and provide a variety of options that encourage reflection, interaction, and collaboration among students and faculty.

Applying the Effective Online Teaching Practices

- ☑ For more information about additional resources and training related to the ways in which you can learn to apply the principles and practices recommended in this document, contact your college's local **Distance Learning Support Staff and Faculty Mentors**: http://www.commnet.edu/academics/webct/dl_staff.asp.
- ☑ For more information about WebCT Vista in the Connecticut Community Colleges, visit our **WebCT Resources for Faculty** website: www.commnet.edu/academics/webct.
- ☑ **WebCT Vista Frequently Asked Questions**: http://www.commnet.edu/academics/webct/faqs.asp.
- ☑ This document available online at http://www.commnet.edu/academics/webct/best_practices.asp.

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Outline of Effective Teaching Practices Guidelines

This document is organized within three main sections, each of which has two or more major subsections, as shown below.

I. COURSE DESIGN

A. Course Objectives

B. Pedagogical: Learning & Teaching Theory

C. Class Management

II. STUDENT SERVICES

A. Instructor informs students of available resources

B. Instructor promotes ethical behavior

III. TECHNOLOGICAL ISSUES

A. Student Use of Technology

B. Course Management System (CMS) Tools

C. Technological Support for Faculty

D. Interface Design

REFERENCES

GLOSSARY OF TERMS

Each instructor should determine which of these recommended practices is appropriate to his or her discipline and teaching preferences. Additionally, each instructor should determine the extent to which these recommendations apply individually or collectively to the online component of the course.

I. COURSE DESIGN

A. Course Objectives

1. **The learning objectives of the course are clearly stated and understandable to the student**
2. **A complete, clear course syllabus is available for review**
3. **The course is organized in coherent, sequential manner**
4. **Assignments are aligned with stated objectives/learning outcomes**
5. **Meaningful Assessments are created and provided**
    a. The type and quality of student assessments included are appropriate for the course and tied to course objectives
    b. Students are provided an opportunity for formative assessment and feedback
    c. Instructor feedback is more than a grade
    d. Clear grading criteria are defined
    e. Consistent feedback is given
    f. Student assessments are external to the online learning environment where appropriate

B. Pedagogical: Learning and Teaching Theory

1. **Instructor facilitates the learner's efforts in constructing and interpreting new knowledge (Active learning)**
    a. Student engagement
        (1) Students are requested to introduce themselves to the class
        (2) Discussions are learner focused
        (3) Students have opportunities to make choices about course content or activities
        (4) Cooperation between students is encouraged
    b. Course Facilitation
        (1) Moderate discussions
        (2) Present content in a logical progression
        (3) Make content available to students in manageable segments
        (4) Scaffold important information
            (i) Provide a statement introducing students to the course and to the structure of the student learning

(ii) Create course assignments and projects that require students to make appropriate and effective use of external resources, including print, library, Web-based, and other electronic resources

(iii) Provide students with mental models (schemas) to help organize material

2. **Instructor integrates the diversity of students' needs and experiences into the learning process (Constructive learning, prior knowledge)**
   a. Consider diverse learning styles
   b. Consider prior experience and knowledge
   c. Consider cultural diversity
3. **Instructor encourages and develops higher-level critical thinking (Intentional learning)**
   a. Communicate high expectations
      (1) Provide opportunities for students to work at the higher levels of Bloom's taxonomy: knowledge, comprehension, application, analysis, synthesis, and evaluation
   b. Give students opportunities to engage in abstract thinking and critical reasoning
4. **Instructor promotes self-directed learning, guided discovery and reflection (Reflective learning)**
   a. Encourage personal autonomy
   b. Provide opportunities for reflection (metacognition)
   c. Encourage self-assessment
   d. Provide opportunities to identify topics, problems, cases and make informed judgments
5. **Instructor facilitates learning through interactive, collaborative activities (Collaborative learning)**
   a. Encourage learner cooperation
   b. Develop varied collaborative activities: research and group projects; peer assessments
6. **Instructor anchors instruction with authentic tasks situated in real-world contexts (Contextual learning)**
   a. Create activities relevant to learners that allow learners to attach personal meaning to content
   b. Create authentic activities that involved problem-based or case-based activities
   c. Create simulations (virtual, role-play) that apply to real-world issues
7. **Instructor promotes a conversational, social, dialogical process (Conversational learning)**
   a. Incorporate social aspects to improve satisfaction, provide a realistic environment, present multiple viewpoints, and overcome anonymity

b. Develop varied opportunities for interaction: student-student; student-instructor; student-content

c. Ensure a sense of community

(1) Create a safe environment

(2) Participate in discussions (and/or chats) and post a self-introduction

(3) Acknowledge learner contributions

(4) Moderate disagreements and group problems

(5) *Provide separate communication opportunities for sharing non-course information*

C. Class Management

1. **Post course materials online in advance so learners can plan**
2. **Assure that all learners are 'on board' at the beginning of the course**
3. **Provide clear and concise directions on how to navigate through the course**
4. **Convey changes and updates**
5. **Return learner calls/emails quickly to allow learners to progress**
6. **Refer problems to appropriate sources and follow up to ensure resolution**
7. **Have an alternate plan in case WebCT/Vista is unavailable**
8. **Make a course backup at the beginning and the end of the semester**

II. STUDENT SERVICES

A. Instructor informs students of available resources

1. **Library**
2. **Technological support**
3. **Counseling services**
4. **Tutoring and learning support**

B. Instructor promotes ethical behavior

1. **Provide information on ethical use of resources**
2. **Explain issues of academic integrity and plagiarism**

III. TECHNOLOGICAL ISSUES

A. Student Use of Technology

1. **Clearly state minimum technology requirements**
2. **Identify required level of technological literacy (e.g. downloading/uploading files; using attachments)**
3. **Contingency plans for downtime are created**
4. **Student connectivity issues are considered**
5. **Technologies required for this course are either provided or easily downloadable**
6. **The tools and media are compatible with existing standards of delivery modes**
7. **The course makes appropriate use of digitized audio and video, whether internal to the course or external via the Web or other media**
    a. Streaming video, audio, graphics, podcasts, SCORM
    b. Other tools outside Vista: MUDS/MOOS/Blogs

B. Course Management System (CMS) Tools

C. Technological Support for Faculty

1. **Instructors should become familiar with local resources**
2. **Instructors should become familiar with system wide resources**

D. Interface Design

1. **Navigational choices**
    a. Build in intuitive navigational instructions and choices
    b. Use good information design in course organization (e.g., chunking, sequencing, queuing of course components and written materials)
2. **Americans with Disabilities Act (ADA)**
    a. Provide equivalent alternatives to auditory and visual content
    b. Show sensitivity to readability issues
    c. Maintain a standard page layout and navigation method throughout the web site.
    d. Use headings, lists, and consistent structure
    e. Avoid the unnecessary use of icons, graphics and photographs
    f. Include textual as well as graphical navigation aids

g. Provide meaningful and descriptive text for hyperlinks, don't use short hand, e.g. "click here"; instead of "Follow this link to our News Page". (Assistive technology devices, such as screen readers can search specifically for linked text; "click here" provides no indication of where the link will take them.) If documents are provided in a specialized format (e.g. PDF (Portable Document Format), etc.) provide the equivalent text in plain text or HTML format.

h. If you link to an audio file, inform the user of the audio file format and file size in kilobytes

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GLOSSARY OF TERMS

Active learning In traditional or pedagogical education, material to be learned is often transmitted to students by teachers. That is, learning is passive. In active learning, students are much more actively engaged in their own learning while educators take a more guiding role. This approach is thought to promote processing of skills/knowledge to a much deeper level than passive learning. Related terms/concepts include: experiential learning, hands on learning.

Taken from: Herod, L. (2002).Adult learning from theory to practice. Retrieved March 15, 2006 from http://www.nald.ca/adultlearningcourse/glossary.htm

ADA (Americans with Disabilities Act) When Congress passed the Rehabilitation Act of 1973, it included Section 504 which forbade discrimination against persons with disabilities by programs and activities receiving federal financial assistance, which included virtually every institution of higher education, except the U.S. military academies and a few small religious schools. The Americans with Disabilities Act of 1990 (ADA) was patterned after Section 504. It requires that students with disabilities may not be excluded from participation in, or be denied the benefits of, or be subjected to discrimination by any institution which is subject to the ADA. The ADA does not require that the institution receive federal financial assistance. A postsecondary institution must make reasonable accommodations in order to provide students with disabilities an equal opportunity to participate in the institution's courses, programs and activities.

Retrieved March 16, 2006 from: NETAC Teacher Tipsheet was compiled by Jo Anne Simon, Attorney at Law, Brooklyn, New York. http://www.netac.rit.edu/publication/tipsheet/ADA.html

See also: Distance Education: Access Guidelines for Students with Disabilities August 1999 http://www.htctu.net/publications/guidelines/distance_ed/disted.htm
And Web Accessibility Initiative (WAI) http://www.w3.org/WAI/

Assistive technology Assistive technology is either software, hardware, or both which is designed to help individuals with disabilities be more independent. In general, the term is applied to technology, such as screen readers, designed to help individuals with vision disabilities but it can also be applied to tactile aides such as haptic devices and software.

Audio Audio refers to the sound component of multimedia content.

Blog A blog (web log) is web-based journal. It gives a chronological, usually daily, account of the author's interests, activities or life.

Bloom's Taxonomy Beginning in 1948, a group of educators, headed by Benjamin Bloom, undertook the task of classifying educational goals and objectives. The intent was to develop a classification system for three domains: the cognitive, the affective, and the psychomotor. Work on the cognitive domain was completed in 1956 and is commonly referred to as Bloom's Taxonomy of the Cognitive Domain (Bloom et al., 1956). It is a classification of thinking with six different levels, with each successive level increasing in complexity. The first three levels: Knowledge, Comprehension and Application are often referred to as lower level thinking, while the second three levels: Analysis, Synthesis and Evaluation are referred to as higher level thinking.

Anderson & Krathwohl (2001) have proposed some minor changes to include the renaming and reordering of the taxonomy. Anderson and Krathwohl expanded the single dimension of the original taxonomy into a two-dimensional framework consisting of factual/conceptual knowledge

and cognitive processes.

The revised taxonomy incorporates both the kind of knowledge to be learned (knowledge dimension) and the process used to learn (cognitive process), allowing for the instructional designer to efficiently align objectives to assessment techniques.

For further information see: Bloom, B., Englehart, M. Furst, E., Hill, W., & Krathwohl, D. (1956). Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain. New York, Toronto: Longmans, Green.

Also see: Anderson, L.W., & Krathwohl (Eds.). (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman.

Definition based on information retrieved March 15, 2006 from: http://www.nexus.edu.au/teachstud/gat/morrison.htm, http://chiron.valdosta.edu/whuitt/col/cogsys/bloom.html, and http://www.bena.com/ewinters/Bloom.html.

Collaborative learning "A structured instructional interaction among two or more learners to achieve a learning goal or complete an assignment" (Clark & Mayer, 2003, p. 310).

Taken from: Clark, R. C., & Mayer, R. E. (2003). E-learning and the science of instruction. San Francisco, CA: John Wiley & Sons, Inc.

Constructive learning Learning based on the constructivist philosophy, which places emphasis on the active involvement of the learner as he or she constructs his or her own knowledge.

Constructivist Learning Theory Constructivist learning theory is based on the belief that individuals actively construct their own knowledge and their own understanding of the world based on past knowledge. Constructivists believe that the environment needs to be highly adaptive to the student, and they rely heavily on student initiative, allowing students to learn at their own speed. People then construct meaning by the way in which they make sense of their experiences as an internal cognitive activity (Alessi & Trollip, 2001). "Meaning is made by the individual and is dependent on the individual's previous and current knowledge structure" (Merriam & Caffarella, 1999, p. 261). In constructivism, the brain not only finds slots to house the information entering it, but it must also process and interpret the information. This process may be conscious or unconscious, but it is the process through which learning occurs. This process of interpretation may also be referred to as metacognition or the process of thinking about thinking. (Taken from Cercone, 2006).

Contextual learning Occurs in close relationship with actual experience, allowing students to test academic theories through real-world applications.

Conversational learning The process by which learners construct meaning and new knowledge through discussion and social interaction.

Critical thinking Critical thinking includes the ability for a person to use his/her intelligence, knowledge and skills to question and carefully explore situations to arrive at thoughtful conclusions based on evidence and reason. A critical thinker is able to get past biases and view situations from different perspectives to ultimately improve his/her understanding of the world. According to Brookfield critical thinking includes reflecting on the assumptions underlying our actions, and considering new ways of looking at the world and living in it.

Brookfield, Stephen D., (1989) Developing Critical Thinkers - Challenging Adults to Explore Alternative Ways of Thinking and Acting, Jossey Bass Publishers, San Francisco.

The *Critical Thinking Organization* has a lot of information about critical thinking with many references, http://www.criticalthinking.org/.

Dialogic instructional strategies Instructional strategies that promote discursive student activities (students are engaged in articulation, reflection, or collaboration or are exposed to multiple perspectives).

Taken from: Dabbagh, N., & Bannan-Ritland, B. (2005). Online learning: Concepts, strategies, and application. Upper Saddle River, NJ: Pearson Education, Inc.

Formative evaluation At its most basic, formative evaluation is an assessment of efforts prior to their completion for the purpose of improving the efforts. It is a technique that has become well developed in the education and training evaluation literature. [Michael Scriven, 1991) See also *Summative evaluation*.

Retrieved March 15, 2006 from:
http://www.beyondintractability.org/essay/formative_evaluation/

Graphics Graphics refers to images or pictures, particularly when displayed on web pages.

Guided discovery Guided Discovery is a method of instruction based on the Discovery Learning Theory. Discovery learning can be defined simply as a learning situation in which the principal content of what is to be learned is not given, but must be independently discovered by the learner, making the student an active participant in his learning. Jerome S. Bruner is credited with first introducing discovery learning as a formal learning theory in 1960. One example of true discovery learning is the use of hypertext and hypermedia environments, such as the World Wide Web, that rely on learning by browsing.

Bruner, J.S. (1960) The Process of Education, Harvard University Press: Cambridge, MA.

Bruner, J.S. (1966) Toward a Theory of Instruction, Harvard University Press: Cambridge, MA.

Definition based on information taken from:
http://www.npexplore.com/AboutExplore/about.cfm

HTML (HyperText Markup Language) HTML is a language to specify the structure of documents for retrieval across the Internet using browser programs of the World Wide Web. An HTML file is a special kind of text document (with an HTM or HTML file extension) that presents both text and graphics in a Web browser (a software application, such as Internet Explorer or Netscape, that enables a user to display and interact with web pages on the World Wide Web or a local area network). HTML documents are often referred to as "Web pages". The browser retrieves Web pages from Web servers that, thanks to the Internet, can be pretty much anywhere in World.

Definition retrieved March 15, 2006 from: http://www.ucc.ie/info/net/whatis.html and http://www.w3.org/MarkUp/Guide/.

Intentional learning Three aspects of intentional learning are the (1) decision to engage in committed, persisted learning effort (self-motivation), (2) the ability to apply and manage strategic cognitive efforts to achieve goals (self-direction), and the (3) extent to which the learner takes responsibility for learning autonomously. Intentional learning depends on one's conception

of knowledge, how to connect meaning and use that knowledge to act or create, and the learner's perception of the intended task, activity, or instructional situation. Intentional learners choose to be in charge of their learning. In an intentional learning environment, the teacher's role is to mentor or coach and the learner's role is to question, connect, reflect, and apply knowledge to create, act, and achieve.

Taken from: The Training Place. (2005). Intentional Learning. Retrieved March 15, 2006 from http://www.trainingplace.com/il/.

Interaction "Structured opportunities for the learner to engage with the content by responding to a question or taking an action to solve a problem" (Clark & Mayer, 2003, p. 315).

Metacognition "Awareness and control of one's cognitive processing, including setting goals, monitoring progress, and adjusting strategies as needed" (Clark & Mayer, 2003, p. 313). Metacognition is "knowledge of one's knowledge, processes, and cognitive and affective states; and the ability to consciously and deliberately monitor and regulate one's knowledge, processes, and cognitive and affective states." In more general terms, metacognition is the awareness of the acquisition of mental organization skills, and the ability to apply these organization and recognition skills.

What is basic to the concept of metacognition is the notion of thinking about one's own thoughts. Those thoughts can be of what one knows (i.e., metacognitive knowledge), what one is currently doing (i.e., metacognitive skill), or what one's current cognitive or affective state is (i.e., metacognitive experience). To differentiate metacognitive thinking from other kinds of thinking, it is necessary to consider the source of metacognitive thoughts: Metacognitive thoughts do not spring from a person's immediate external reality; rather, their source is tied to the person's own internal mental representations of that reality, which can include what one knows about that internal representation, how it works, and how one feels about it. Therefore, metacognition sometimes has been defined simply as thinking about thinking, cognition of cognition, or using Flavell's (1979) words, "knowledge and cognition about cognitive phenomena" (p. 906).

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. American Psychologist, 34, 906-911.

Definition based on information taken from: http://www.emstac.org/registered/topics/studyskills/metacognition.htm and http://www.psyc.memphis.edu/trg/meta.htm.

Mental models Mental models are deeply ingrained assumptions, generalizations, or even pictures and images that influence how we understand the world and how we take action.

Taken from: Smith, M. K. (2001) 'Peter Senge and the learning organization', the encyclopedia of informal education. Retrieved March 14, 2006 from www.infed.org/thinkers/senge.htm

MOO A MOO (MUD Object Oriented) is a game, played online with various participants, in which each player takes control of a character and moves him though the game environment interacting with characters controlled by the other players. The MOO has the added feature that it allows users to make object oriented changes to the playing environment, i.e. to have a greater ability to make more rapid changes. The major functionality of MOOS is made possible by the MOO programming language.

MUD MUD is an acronym for Multi User Dimension, Multi User Domain, or Multi User Dungeon. The acronym refers to a game, played online with various participants, in which each player takes control of a character and moves him though the game environment interacting with characters controlled by the other players. Although computer versions of MUDs date back to the late 1970s, the game is related to the Dungeons and Dragons games that have been played in various formats since the 1970s.

PDF A PDF (Portable Document Format) is special file format created by Adobe Systems Inc. Documents in this format can be distributed electronically across the web and on a variety of platforms all the while retaining their original look. With the use of Adobe's PDF reader program, documents originally created by any number of programs (word processors, spreadsheets, desktop publishing programs, etc.) appear on the screen exactly as they were meant to look, including the correct type fonts, graphics, etc.. PDF files can be viewed electronically or printed, and can usually be saved to the user's PC. Adobe's PDF reader is called Adobe Acrobat Reader and can be downloaded free of charge from Adobe's website, http://www.adobe.com/products/acrobat/readstep2.html.

Definition (slightly adapted) taken from http://www.medicine.arizona.edu/pubs/what_is_pdf.html

Pedagogy "It is the tools, activities, strategies, and decisions for a more interactive, engaging, collaborative and motivational learning environment" (C. J. Bonk, personal communication, February 12, 2005). Pedagogy relates to the teaching skills and strategies used by instructors to facilitate learning.

Podcasts A Podcast is a sound or video file distributed over the Internet. Although this kind of file is typically available to computers and a host of other devices that connect to the Internet, it owes its name and proliferation to the iPOD, a portable device manufactured by Apple computer, which allows users to download and take with them various kinds of music, sound and audio files.

Problem-based learning PBL is an instructional method that challenges students to "learn to learn," working cooperatively in groups to seek solutions to real world problems. These problems are used to engage students' curiosity and initiate learning the subject matter. PBL prepares students to think critically and analytically, and to find and use appropriate learning resources.

Definition taken from http://www.udel.edu/pbl/; (Barbara Duch bduch@udel.edu)

Reflective learning Consciously thinking about and analyzing what one has done, or is doing.

Scaffolding Scaffolding instruction as a teaching strategy originates from Lev Vygotsky's sociocultural theory and his concept of the zone of proximal development (ZPD). "The zone of proximal development is the distance between what learner can do by themselves and the next learning that they can be helped to achieve with competent assistance." The scaffolding teaching strategy provides individualized support based on the learner's ZPD. In scaffolding instruction a more knowledgeable other provides scaffolds or supports to facilitate the learner's development. The scaffolds facilitate a learner's ability to build on prior knowledge and internalize new information. The activities provided in scaffolding instruction are just beyond the level of what the learner can do alone. The more capable other provides the scaffolds so that the learner can accomplish (with assistance) the tasks that he or she could otherwise not complete, thus helping

the learner through the ZPD.

Adapted from Rachel Van Der Stuyf http://condor.admin.ccny.cuny.edu/~group4/

Schema Schemas (or schemata) are cognitive structures, rather like mental templates or 'frames', that represent a person's knowledge about objects, people or situations. Schemas are derived from prior experience and knowledge. (Chandler, D. 1997. Schema Theory and the Interpretation of Television Programmes. Retrieved on March 16, 2006 from http://www.aber.ac.uk/media/Modules/TF33120/schematv.html.

Screen Reader A screen reader is an application that can interpret text and other types of information shown on a computer screen. The output can either be speech or can feed to a device that produces Braille text. Blind and low vision computer users are able to take advantage of this assistive technology.

SCORM The Shareable Content Object Reference Model (SCORM) is an XML-based framework used to define and access information about learning objects so they can be easily shared among different learning management systems (LMSs). SCORM was developed in response to a United States Department of Defense (DoD) initiative to promote standardization in e-learning.

Taken from http://searchwebservices.techtarget.com/sDefinition/0,,sid26_gci796793,00.html.

Self-directed learning Self-directed learning has been described as "a process in which individuals take the initiative, with or without the help of others," to diagnose their learning needs, formulate learning goals, identify resources for learning, select and implement learning strategies, and evaluate learning outcomes (Knowles 1975). An estimated 70 percent of adult learning is self-directed learning (Cross 1981).

Adult educators have found that some adults are incapable of engaging in self-directed learning because they lack independence, confidence, or resources. Not all adults prefer the self-directed option, and even the adults who practice self-directed learning also engage in more formal educational experiences such as teacher-directed courses (Brookfield 1985).

Brookfield, S. "The Continuing Educator and Self-Directed Learning in the Community." In Self-Directed Learning: From Theory to Practice, edited by S. Brookfield. New Directions for Continuing Education No. 25. San Francisco: Jossey-Bass, 1985.

Cross, K. P. Adults As Learners. San Francisco: Jossey-Bass, 1981.

Knowles, M. Self-Directed Learning: A Guide for Learners and Teachers. New York: Association Press, 1975.

Definition based on information taken from http://www.ntlf.com/html/lib/bib/89dig.htm.

Streaming Video Streaming video is a sequence of "moving images" that are sent in compressed form over the Internet and displayed by the viewer as they arrive. Streaming media is streaming video with sound. With streaming video or streaming media, a Web user does not have to wait to download a large file before seeing the video or hearing the sound. Instead, the media is sent in a continuous stream and is played as it arrives. The user needs a player, which is a special program that uncompresses and sends video data to the display and audio data to speakers. A player can be either an integral part of a browser or downloaded from the software maker's Web site.

Definition taken from http://www.smarterbydesign.com/faq.html.

Summative evaluation Summative evaluation is designed to present conclusions about the merit or worth of an object and recommendations about whether it should be retained, altered, or eliminated. (Scriven, 1991) See also formative evaluation.

Scriven, M. (1991). Evaluation thesaurus (4th ed.) Beverly Hills, CA: Sage

Wiki A wiki is a web page that allows users to actively edit its content within a prescribed format. Wiki is from the Hawaiian word "wiki" which means fast. In general, one user can post information to a web page and other users can makes subsequent changes. Because of their rapid growth and potentially frequent changes, it can be difficult to maintain the veracity of the content of wikis.

"Is Wikipedia legit" (http://www.thecrimson.com/article.aspx?ref=512172)

"Wikipedia exec defends process" (http://www.rockymountainnews.com/drmn/tech/article/0,2777,DRMN_23910_4513833,00.html

"Is Wikipedia error prone?" (http://www.deccanherald.com/deccanherald/mar12006/cyberspace1543232006228.asp)

"Educators warn of errors in Wikipedia" (http://www.charleston.net/stories/?newsID=73215&section=ink)