

Annotated Bibliography: Online Learning

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Designing Online Learning Environments

Ali, A. (2003). Instructional design and online instruction: Practices and perception. *TechTrends*, 47 (5), 42-45.

Provides an overview of practices and perceptions related to instructional design and online learning, including changes that come with online learning, merits and challenges, and concerns about quality learning. Recommendations are offered in the following areas: appropriateness of the Internet; course content; instructional styles; student skills and interest; access; quality control; time management; and communication.

Anderson, T., & Elloumi, F. (Eds.). (2004). *Theory and practice of online learning*. Athabasca, AB, Canada: Athabasca University. Retrieved April 3, 2006 from

http://cde.athabascau.ca/online_book/

This book provides a comprehensive summary of relevant issues related to online learning including the role and function of theory in online education development and delivery, infrastructure and support for content development, design and development of online courses, and the delivery, quality control, and student support of online courses.

Boettcher, J. V. (2003). Designing for learning: The pursuit of well-structured content. *Syllabus*, 16 (6).

Discusses characteristics of well-structured content as it relates to the design of instructional technology resources. Topics include online course design; online learning; principles of designing for learning; multimedia learning resources; knowledge structures; digital learning resources; and differences in digital content.

Brown, A. R., & Voltz, B. D. (2005). Elements of effective e-learning design. *International Review of Research in Open and Distance Learning*, 6 (1). Retrieved April 3, 2006 from

<http://www.irrodl.org/index.php/irrodl/article/view/217>

This paper highlights the elements of effective design that assist in the development of high quality materials in a cost efficient way. Six elements of design are discussed:

paying attention to the provision of a rich learning activity, situating this activity within an interesting story line, providing meaningful opportunities for student reflection and third party criticism, considering appropriate technologies for delivery, ensuring that the design is suitable for the context in which it will be used, and bearing in mind the personal, social, and environmental impact of the designed activities.

Brown, B. L. (2000). *Web-based training. ERIC Digest No. 218*. Retrieved March 20, 2005, from <http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED445234>

Reduced costs, worldwide accessibility, and improved technological capabilities have made Web-based training (WBT) a viable alternative to classroom instruction. Efficiency of operation is another major advantage of WBT. The flexibility of time, place, and programs offered via WBT appeals to learners who must balance school with work and home responsibilities. Task- and detail-oriented people who are focused in their study habits and engaged in learning tasks requiring creative thinking and analysis are most successful in using computer-based, online programs. WBT programs must be designed to accommodate learners' needs, allow learners the freedom to follow unique paths to learning in their own cognitive styles, and require adult learners to construct meaning. Studies of the advantages and disadvantages of WBT training have identified tips to help developers use the Web's technological capabilities to advance teaching and learning goals with the same quality achievable through the best classroom instruction.

Chang, S. L. (2004). *Instructional principles for online learning*. Paper presented at the annual meeting of the Association for Educational Communications and Technology, Chicago, IL.

Four instructional principles for alleviating cognitive overload in online learning are suggested: 1) Guide learners to prepare and maintain an effective workstation for accessing online materials, 2) Employ advance organizers for effective online navigation, 3) Arrange instructional materials for easy online manipulation, and 4) Organize instruction to facilitate learners toward developing personal cognitive strategies for meaningful interpretation. This article concludes that these instructional principles should be empirically examined about their effects on online learning achievement.

Delahoussaye, M. & Zemke, R. (2001). 10 things we know for sure about learning online. *Training*, 38 (9), 48-59.

Provides 10 guiding principles related to online learning: (1) know your business, (2) market, (3) respond to needs, (4) know infrastructure, (5) test, (6) create impact, (7) use support systems, (8) use games and simulations, (9) use short modules, and (10) link people through the Web.

Doo, M. Y. (2005). The effects of presentation format for behavior modeling of interpersonal skills in online instruction. *Journal of Educational Multimedia and Hypermedia*, 14 (3), 213-235.

The purpose of this study was to identify the most effective model presentation format in behavior modeling to teach interpersonal skills in online learning environments. Four model presentation formats were compared; video, pictures plus audio, audio only, and text-script only. The effects of the model presentation were investigated in terms of learning outcomes, which were measured by learners' reactions; cognitive retention of learning content; and behavioral reproduction. No significant differences between groups were found in any measure of learning outcomes. The implication of the findings is that it is reasonable to use cost-effective model presentation formats to teach interpersonal skills using behavior modeling.

Doolittle, P. E. (2001). *Multimedia learning: Empirical results and practical applications*. Retrieved April 6, 2006 from <http://www.ipfw.edu/as/tohe/2001/Papers/doo.htm>

Web-based multimedia represents the presentation of instruction that involves more than one delivery media, presentation mode, and/or sensory modality. The basis for the use of multimedia is the assumption that when the user interacts within these various methods they learn more meaningfully. Recently, there has been an increase in the amount of multimedia research that is grounded in cognitive psychology. This research has begun to identify various design principles that are both theoretically grounded and educationally applicable. This session is designed to examine and provide examples of principles of effective multimedia design that are grounded in cognitive psychology.

Dringus, L. P. (2000). Towards active online learning: A dramatic shift of perspective for learners. *Internet and Higher Education*, 2 (4), 189-195.

Discussion of online learning environments focuses on the shift in perspective needed by online learners. Highlights include participation in and completion of an online course; feedback; awareness of self and others; learner-centered metaphors in online course

design; needed research; and recommendations for faculty and administrators to help learners prepare for online learning.

Dunlap, J. C. (1999). *Rich environments for active learning on the web: Guidelines and examples*. Paper presented at WebNet 99 World Conference on the WWW and Internet, Honolulu, HI.

This paper provides guidelines for creating REALs (Rich Environments for Active Learning) on the World Wide Web and demonstrates how those guidelines have been applied in a variety of Web-based learning environment contexts. The paper is organized according to the following attributes of student-centered REALs: (1) promote intentional learning by encouraging the growth of student responsibility, initiative, decision making, and intentional learning, including support for transition to an online learning environment, setting goals, metacognitive awareness, and time management; (2) apply dynamic, generative learning activities that promote high level thinking processes (i.e., analysis, synthesis, problem solving, experimentation, creativity, and examination of topics from multiple perspectives) to help students integrate new and old knowledge and, thereby, create rich and complex knowledge structures, including creating and providing access to resources; (3) utilize authentic learning contexts to promote study and investigation, including contextualizing learning, making learning complex, increasing meaningfulness and realism of activities, and encouraging research; (4) encourage collaboration to cultivate an atmosphere supportive of knowledge building communities; and (5) reinforce reflection by embedding opportunities to reflect on the learning process as well as on the content acquired to promote both learning and metacognitive skill development.

Ely, D. P. (2003). *Selecting media for distance education*. *ERIC digest*. Syracuse, NY: ERIC Clearinghouse on Information & Technology.

This digest explores media options as they relate to instructional design for distance education, because the function and design of each medium needs to be understood, if it is to lead to learning. It examines how the computer has changed traditional offerings of distance education. The process of selecting appropriate media for learning at a distance and the emerging trend of the hybrid approach to teaching and learning at a distance and discusses common designs of hybrid courses are also described. The digest concludes with special considerations for distance learning: (1) determine your primary delivery approach (online or hybrid); (2) review the course outline to determine where media can

be used to facilitate learning; (3) ascertain availability of student access to the media selected; and (4) locate appropriate resources to fit your objectives or plan to create them.

Gunawardena, C. N., Lowe, C., & Carabajal, K. (2000). *Evaluating online learning: Models and methods*. Paper presented at the international conferences of the Society for Information Technology & Teacher Education, San Diego, CA.

This paper critically reflects upon the questions asked and the models and methods employed to evaluate online learning in several studies. These online studies range from setting up online networks for social interaction and facilitating collaborative learning experiences among graduate students in several universities, to moderating worldwide online professional development activities. The paper examines the methodologies used to answer the following evaluation research questions: (1) How can we describe online participation, interaction patterns, and group dynamics? (2) Were students satisfied with their online learning experience? (3) Did participants learn? and (4) Was knowledge constructed? It is concluded that the adoption of a single technique for analyzing the quality of the learning experience in online learning networks has not yielded satisfactory answers, and a mixed methodology approach is recommended to study the complex nature of online learning networks.

Guthrie, H. (Ed.). (2003). *Online learning: Research readings*. Leabrook, Australia: National Centre for Vocational Education Research.

This book comprises an overview and 11 chapters that address issues related to flexible approaches to delivery and online learning in particular including: information and communication technologies literacy, pedagogical implications of online delivery of teaching and training in light of rapid, substantial technological change, support for online learners, setting in which online learning is or is not likely to be cost-effective, and benefits for rural populations.

Hedberg, J. G. (2003). Ensuring quality e-learning: Creating engaging tasks. *Educational Media International*, 40 (3-4), 175-186.

Focuses on several examples of design that have been pedagogically successful and have demonstrated what is possible in software design and online learning. Contrasts are made with some examples of the current push into e-learning and how best to structure learning environments to ensure student participation and high quality learning outcomes.

Herrington, J. (2002). *Designing authentic activities in web-based courses*. Norfolk, VA: Association for the Advancement of Computing in Education.

Influenced by constructivist philosophy and advances in technology, there is increasing interest in authentic activities as a basis for learning in both face-to-face and Web-based courses. Whereas traditionally, activities have primarily served as vehicles for practice of skills or processes, a more radical approach is to build a whole course of study around authentic activities and tasks. This paper presents the case that the value of authentic activity is not constrained to learning in real-life locations and practice, but can be analyzed for the critical characteristics that help to enhance learning in online contexts. It continues with a description of the theory, research, and development initiatives that provide the foundations for this approach. Finally, guidelines for the design of complex authentic activities for online learning and examples are presented, together with the implications of this approach for teachers, students, and designers.

Jereb, E., & Smitek, B. (2006). Applying multimedia instruction in e-learning. *Innovations in Education & Teaching International*, 43 (1), 15-27.

Flexible access to information and resources are key attributes of online educational technologies, and learner choice is at the heart of the concept of flexible access. This incorporates the facility to access subject matter content and support at a time, place and pace that is suitable and convenient for the individual learner. Some practical advice for structuring and designing is given. The advantages of such instruction are described and students' opinions about studying with the help of multimedia instruction are presented.

Johnson, S. D., & Aragon, S. R. (2002). *An instructional strategy framework for online learning environments*. Norfolk, VA: Association for the Advancement of Computing in Education.

The rapid growth of Web-based instruction has raised many questions about the quality of online courses. It appears that many online courses are simply modeled after traditional forms of instruction instead of incorporating a design that takes advantage of the unique capabilities of Web-based learning environments. This paper presents a conceptual framework that can guide the development of online courses. The authors contend that powerful online learning environments need to contain a combination of these principles: address individual differences; motivate the student; avoid information overload; create a real-life context; encourage social interaction; provide hands-on

activities; and encourage student reflection. Specific examples of instructional strategies that fit the framework are described in detail.

Koh, M. H., & Branch, R. M. (2004). *Online learning environments: A report of an instructional design case event*. Paper presented at the annual meeting of the Association for Educational Communications and Technology, Chicago, IL.

This is a discussion about the role of a case or authentic scenario in an online learning environment. Using authentic cases for intentional learning promotes effective, cognitive, and affective transfer between learning space and performance space. Creating an online case event provides an opportunity for learning design professionals to use instructional systems design in an authentic, team-oriented, web-based learning environment. A case approach aids the Instructional Systems Design (ISD) learning process and helps to facilitate further research of online learning environments. Case studies have been an effective tool for developing professional knowledge across disciplines, however, case events dedicated to the study and practice of instructional design is limited among learning services professionals.

Lewis, N. J., & Orton, P. (2000). The five attributes of innovative e-learning. *Training & Development*, 54 (6), 47-51.

Knowing learner preferences can inform instructional design, but may not produce effective online learning. Five attributes that are strong predictors of an innovation's effectiveness should also be considered: relative advantage, compatibility, complexity, trialability, and observability.

Marra, R. M. (2002). The ideal online learning environment for supporting epistemic development: Putting the puzzle together. *Quarterly Review of Distance Education*, 3 (1), 15-31.

Examines the concept of the ideal online learning environment of the future that would encourage learners' epistemological development. Suggests that advanced epistemological development is a desirable outcome for online education, explores current limitations of online learning environments in terms of epistemic development, and describes emerging technologies that can encourage epistemic development.

Mccombs, B. L., & Vakili, D. (2005). A learner-centered framework for e-learning. *Teachers College Record*, 107 (8), 1582-1600.

The age is here of distance learning and new forms of e-learning. The rate at which a variety of institutions are entering the distance learning arena is increasing rapidly. In spite of the increased popularity and presence of online learning opportunities, however, many researchers and practitioners are decrying the lack of a research-validated framework to guide their design. Other researchers and practitioners point out that what works in effective traditional learning environments may or may not work in online environments. These concerns are addressed in this article through a review of relevant research and the presentation of a learner-centered framework. This framework is based on the American Psychological Association's (1997) research-validated Learner-Centered Psychological Principles, developed from over a century of research.

Moore, J. C. (2004). *Elements of quality online education: Into the mainstream: Wisdom from the Sloan Consortium*. Needham, MA: The Sloan Consortium.

This book contains sixteen papers addressing online education issues ranging from programs and institutions to effective practices to insights about the future of higher education as new models emerge that will improve learning effectiveness, cost effectiveness, access, faculty satisfaction and student satisfaction.

O’Fathaigh, M. (2002). *E-learning and access: Some issues and implications*. UACE Conference, University of Bath, 2002. Retrieved March 22, 2005, from <http://www.ucc.ed/ucc/depts/ace/e-learning.pdf>

This article advocates the careful management of the learning process, application of best principles and practices in e-learning design strategies, effective attention to staff development, provision of extensive learner support services, and careful focus on a range of socio-educational issues when creating web-based instruction., otherwise a widening gap in access between rich and poor, young and old, employed and unemployed, and computer literate and illiterate persons can occur. Access to e-learning may actually be made more difficult by the wider implementation of technologies used to improve it. Some issues related to learner access include awareness, situation/location, user cost and perceptions, e-learning design strategies, and personal competence and skilling. Other access issues are: an organization's level of readiness for e-learning; faculty participation; convenience of access as an important factor influencing learner satisfaction with the system; and the extent of congruity/compatibility among adults' learning styles and e-learning.

Schaller, D. T., & Allison-Bunnell, S. (2003). *Practicing what we teach: How learning theory can guide development of online education activities*. Paper presented at international conference of Museums and the Web 2003, Charlotte, NC.

Educational Web designers increasingly employ techniques borrowed from interactive exhibit developers, video game producers, and museum educators to create compelling activities that fully exploit the strengths of the new medium. Constructivist learning theory often informs these new approaches. However, transplanting learning theory from the classroom to the Web poses unique challenges. This paper reviews several theories of learning and explores ways to incorporate them into the development and design process for interactive Web sites. Constructivism is the basis for all of the learning theories surveyed in this paper. Each of these, however, clarifies, expands upon, or revises the notion of constructivism in ways that can help Web designers better conceptualize and execute their projects.

Schutt, M. (2003). Scaffolding for online learning environments: Instructional design strategies that provide online learner support. *Educational Technology*, 43 (6), 28-35.

Discusses strategies that can guide the design of online instructional environments that embed scaffolding elements, based on the fields of educational technology and cognitive psychology. Includes organization and presentation of information that facilitate perpetual attention and information processing; articulating tacit knowledge of experts; supporting novice and expert approaches; and addressing student needs.

Stephenson, J. (Ed.), (2001). *Teaching & learning online: Pedagogies for new technologies*. Sterling, VA: Stylus Publishing.

This book looks at the developing understanding of approaches to online teaching and the emergence of pedagogies that will ensure online teaching and learning materials are effective.

Twigg, C. A. (2003). Improving learning and reducing costs: New models for online learning. *EDUCAUSE Review*, 38 (5), 28-38.

Describes five course redesign models (supplemental, replacement, emporium, fully online, and buffet) used by grantees of the Program in Course Redesign sponsored by the

Pew Charitable Trusts. The grants helped organizations redesign instruction using technology to achieve quality enhancements as well as cost savings.

Adult Learners and Online Education

Clarke, A. (2002). *Online learning and social exclusion*. Leicester, UK: National Institute of Adult Continuing Education.

Online learning covers a wide range of technologies and formal and informal learning methods. A key factor promoting the significant enthusiasm for online learning across all education and training sectors is its potential to overcome many of the barriers of place, pace, and time that socially and economically disadvantaged adults face in accessing learning opportunities. The following are among the online learning issues that must be addressed when establishing online learning programs: online learners' characteristics and needs; tutorial and other forms of support; wider participation; collaborative learning; vicarious learning; design of materials; learning to learn; characteristics of different approaches; moderating and facilitating; location of access; costs and benefits; and retention. The following social issues must also be addressed: socially excluded communities; Internet access and use; learners' attitudes; online communities; informal learning; teleworking; digital democracy; access to knowledge; barriers to online learning; information and computer technology and families, communities, learners, and organizations.

Cook, R. S., Rule S., & Mariger, H. (2003). Parent's evaluation of the usability of a web site on recommended practices. *Topics in Early Childhood Special Education*, 23 (1), 19-27.

This article describes 21 parents' evaluation of a Web site intended to provide practical information about recommended practices such as activity-based or embedded instruction to families whose young children have disabilities or are at developmental risk. The parent group found the Web site, SPIES for Parents, to be helpful, useful, and responsive to their needs and time constraints.

Digilio, A. H. (1998). Web-based instruction adjusts to the individual needs of adult learners. *Journal of Instruction Delivery Systems*, 12 (4), 26-28.

Discusses characteristics of older adult learners and the reasons that Web-based instruction provides the flexibility to meet the needs of adult learners. An examination of

the literature shows that adult learners experience different constraints, motivations, and learning styles than do traditional college students, and distance-learning technologies can overcome many constraints.

DuCharme-Hansen, B. A., & Dupin-Bryant, Pamela A. (2005). Distance education plans: Course planning for online adult learners. *TechTrends*, 49 (2), 31-39.

To create effective online learning for adult learners, curriculum objectives must be solid, course activities must be value laden, and the main focus of the educational experience must be the learner. While these outcomes are difficult to achieve without proper planning, this article explains how distance education plans can offer a vehicle for creating, maintaining, and sustaining a successful online learning experience. This article discusses the six components of a successful distance education plan: assessment, guidance, building community, communication, humanizing, and evaluation.

Hopey, C. E. (1998). *Technology, basic skills, and adult education: Getting ready and moving forward. Information Series No. 372*. Columbus, OH: Center on Education and Training for Employment.

The monograph is organized into two sections. Section I: "Getting Ready" is designed to help educators get started, plan for, and integrate technology into adult education. The five papers in this section are as follows: "Making Technology Happen in Adult Education" (Christopher E. Hopey); "Planning and Funding for Technology" (Hopey); "Making the Right Choice: Software Evaluation" (Hopey); "Integrating Technology into Adult Learning" (Lynda Ginsburg); and "Recommendations for Using Technology in Adult Education" (Hopey). Section II: "Moving Forward," contains six papers that address the following topics: "Adult Learning Theory: An Argument for Technology" (Regie Stites); "Technology in Adult Education Programs" (Terilyn C. Turner); "Using Technology for Assessment in Adult Learning" (John P. Sabatini); "Distance Learning and Adult Basic Education" (John Fleischman); "The Internet and Adult Educators" (David Rosen); and "Adult Learning, Technology, and Public Policy" (Mary Lovell).

Hudson, L., McCloud, R., Buhler, T., Cramer, S., Greer, L., & Paugh, R. (1998). *Supporting adult students in web-based courses: Real examples for serving non-traditional, adult, and minority students*. Presentation at the National Adult Learner Conference, Richmond, VA.

A variety of educational practices are used to support adult learners in fully web-delivered college courses. Use of the web as the sole means of delivery offers some

challenges for learner support, especially for adults, non-traditional students, and minorities. Some of the challenges include newness to technologies, access, software learning, and the traditional challenges to adults, such as lack of time and family demands. A variety of techniques are used to support adult learners facing these challenges, including the following: (1) an orientation session and hands-on training; (2) Web support through a new program, Web PALs (Peer Assisted Learners); (3) a minority student program; (4) peer support within courses; (5) individual e-mail contact; and (6) traditional telephone calls. This article contains descriptions of these approaches and offers strategies for implementing similar approaches at other schools.

Kim, K. J. (2004). *Motivational influences in self-directed online learning environments: A qualitative case study*. Paper presented at the annual meeting of the Association for Educational Communications and Technology, Chicago, IL.

The purpose of this study is to investigate the problems associated with learner motivation in Web-based instruction, in particular in self-directed online learning environments. This study is interested in identifying and exploring what motivate or demotivate learners from completing a self-directed online course, which have implications for designing motivating online learning environments. In more detail, this study will answer the following questions: (1) What are motivating and inhibiting factors to learn in self-directed online learning environments? (2) Does learner motivation change during instruction? if so, how? and (3) Are there individual differences in learners' motivational levels in self-directed online learning environments? The results of this study are expected to increase our understanding of the motivational needs of the participants of self-directed online computer training by identifying what motivate or demotivate them to learn computer skills in a self-directed learning environment. The results of the study are expected to inform instructional designers of how to design a motivating online learning environment.

Korhonen, V. (2004). Contextual orientation patterns as describing adults' personal approach to learning in a web-based learning environment. *Studies in Continuing Education*, 26 (1), 99-116.

The purpose of this study was to explore patterns of learning among adult learners in a Web-based learning environment over the study period of one year in the Open University in Tampere and Lohja in Finland. Using adapted grounded-theory analysis, this study describes two main contextual orientations in the Web-based learning

environment. Contextual orientation formed the main concept describing orientation differences in learning, in the metacognitive management of learning, and in the construction of own expertise. If learning goals and general approach to learning serve learners' interests in developing their own know-how and expertise, goals and targets of learning are wider than those offered by the learning environment.

Lockwood, F., & Gooley, A. (Eds.). (2001). *Innovation in open & distance learning: Successful development of online and web-based learning*. Herndon, VA.: Stylus Publishing.

This book contains 19 papers examining innovation in open and distance learning through development of online and World Wide Web-based learning. Some papers of interest include: "Innovation in Distributed Learning: Creating the Environment" (Fred Lockwood); "Innovation in Open and Distance Learning: Some Lessons from Experience and Research" (Bernadette Robinson); "Selecting an Integrated Electronic Learning Environment" (Alistair Inglis); "Flexible Toolboxes: A Solution for Developing Online Resources?" (Ron Oliver, Stephen Towers, Peter Skippington, Yvonne Brunetto, Rod Farr-Wharton, Ann Gooley); "Lifelong Learning: Generating New Learning Opportunities" (Anne Gooley, Peter Skippington, Stephen Towers).

McMahon, M., & Oliver, R. (2001). *Promoting self-regulated learning in an on-line environment*.

Charlottesville, VA: Association for the Advancement of Computing in Education.

Self-regulation has long been seen as a desirable but difficult to achieve instructional aim. This is particularly true of online learning, where users have limited instructional support and where attrition rates tend to be greater than in face-to-face teaching. This paper examines the nature of self-regulation, identifying affective and cognitive skills that make for self-regulated learners. The broad psychological states of metacognition and self-concept are identified as well as the motivational and cognitive processes that underpin them. The volitional, learning, and regulatory strategies that learners use are delineated. These are placed within the context of online learning. Aspects that characterize learning environments that support self-regulation are identified, and suggestions are made as to how self-regulation can best be enhanced within online education.

Muir, D. J. (2001). *Adapting online education to different learning styles*. Paper presented at the annual National Educational Computing Conference. Chicago, IL.

The purpose of this research project was to determine if online learning could be adapted to individual learning styles and if this made a difference in the standardized testing scores of Internet students. An overview is provided of current learning theories, including the four stages of learning (exposure, guided learning, independent, mastery) and learning styles. Components of the ideal online course are summarized.

Schaller, D. T., Allison-Bunnell, S., Borun, M., & Chambers, M. B. (2002). *How do you like to learn? Comparing user preferences and visit length of educational web sites*. Museums and the Web 2002 International Conference, Boston, MA. Retrieved March 20, 2005, from <http://eduweb.com/likelearn.html>

This study found there are clear differences in the type of Web-based learning activity preferred by adults and children. Adults are more likely to select Interactive Reference or Simulation whereas children prefer Creative Play and Role-playing Stories. The adult sites yield more straightforward cognitive information, while the sites preferred by children allow more personal choice and interaction. Apparently, adults bring an intrinsic motivation to the learning experience. They know what they want to learn, and they want to learn it in the most direct way.

Smith, P. J. (2005). Learning preferences and readiness for online learning. *Educational Psychology*, 25 (1), 2-12.

This study identified the ability to self-manage learning and comfort with e-learning as factors for readiness for online learning. These factors are interpreted and discussed within a framework of the broader literature on learning preferences associated with flexible delivery and resource-based learning.

Williams, S. W. (2002). Instructional design factors and the effectiveness of web-based training/instruction. In R. M. Cervero, B. C. Courtenay, & C. H. Monaghan (Eds.), *The Cyril O. Houle Scholars in Adult and Continuing Education Program Global Research Perspectives: Volume II* (pp. 132-145). Athens, GA: University of Georgia. Retrieved April, 6, 2005 from <http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED474156>

This study identified adult learning principles critical for effective Web-based instructional design (WBID), barriers to effective WBID, and practices of professionals who design WBID. Findings indicated the following: (1) 36 principles were found critical for design of effective Web-based training or instruction; and (2) 3 barriers that impede

successful implementation of Web-based training or instruction were instructor accessibility and responsiveness, instructor's expectation of students, and fostering a participatory online learning environment. Implications for WBID include allowing learners to share experiences; including aids that help relate new material to current knowledge and prior experiences; providing graphics, examples, cases, analogies, and activities; including checkpoints; and allowing learners to be self-directed.

Zielinski, D. (2000). Can you keep learners online? *Training*, 37 (3), 64-66, 68, 70, 73, 74-75.

Reasons people do not complete online training courses include (1) no incentives, (2) lack of connectedness, (3) learner preference for instructor-led courses, (4) poor course design, (5) "some is enough," and (6) lack of perks. Course delivery must consider three elements: the technology, course design, and the learning environment.