The Web: Design for Active Learning

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This handbook will present the idea of interactivity as it applies to a cohesive design including high interface, content, and instructional design.

Contents

Introduction

Interactivity

"Information is not instruction...",
David Merrill, 1997

An interactive provides varying levels of interactivity, ranging from simple point-and-click interaction through sophisticated search techniques to the analysis, manipulation, and application of information in new and authentic contexts.

The authors of Interactivity by Design (1995) describe interactivity this

way:

Computers and software are tools, and their purpose is to help people interact with words, numbers, and pictures. What's different today is that computers are being used for activities that never used to be considered interactive - such as reading, watching, or simply being entertained. And this means that the audience, not the designer, now controls the sequence, the pace, and most importantly, what to look at and what to ignore (p.1).

This definition of interactivity focuses on aspects of interface design. Effective instruction relies on both thoughtful interface design and instructional design, which work together .

Interactivity in instructional takes on a more complex meaning. In good instruction, interactivity refers to active learning, in which the learner acts on the information to transform it into new, personal meaning. In a constructivist sense, the learner co-constructs meaning by exploring an environment, solving a problem, or applying information to a new situation that he/she helps to define.

This handbook will present the idea of interactivity as it applies to a cohesive design including high quality interface, content, and instructional design

Hypermedia and Constructivist Frameworks

The development of HTML and supporting tools has made it possible to develop learning environments that reflect, to varying degrees, constructivist tenets of faith (Love & Gosper, 1996). These principles are summarized here: Basic tenets:

- Learners construct their own meaning and interpretations of instruction.
- Instructional goals will be negotiated, not imposed.
- Task and content analysis would focus less on identifying and prescribing a single best sequences for learning, but would instead identify several alternatives.
- Evaluation would be less criterion-referenced (for example, might include portfolios).

Appropriate for:

- anchored or problem-based instruction where learners have to discover rules to solve a problem
- multiple representations of reality
- viewing events from multiple perspectives
- hypermedia environments

Problems:

Hypermedia is a strategy used by constructivists. But these systems are loose, associative, and non-sequential; and are ill-suited to situations where directed learning is required. Domains requiring mastery of lower-order skills should not have a constructivist approach.

The Cognitive Group and Vanderbilt has noted some cautions with hypermedia environments for some adult learners, who experience a high level of anxiety when working in random, non-sequential environments. These learners benefit from learner control with guidance, in which effects of decisions (paths to take, order of instruction, complexity, etc.) are clearly described. These learners also prefer clearly defined learning outcomes, or tasks, and recommended sequencing, from which they can orient themselves at any time.

Environments that encourage active learning are based on learners making decisions about task, content, navigation, presentation, and assessment. They make use of a number of cognitive strategies that enable the learner to elaborate on their own existing knowledge structures (schema), in other words, to construct new knowledge and understanding. In this handbook, we are using Jonassen's (1994) work (see also Schank & Cleary, 1995, "five teaching architectures") to suggest 6 conceptual frameworks to create Web-based instruction that:

- provides multiple representations of reality, representing the natural complexity of the real world
- presents authentic tasks that conceptualize rather than abstract information
- provides real-world, case-based contexts, rather than pre-

determined instructional sequences
- foster reflective practice
- enables context and content dependent knowledge construction
- supports collaborative construction of knowledge through social negotiation, as opposed to competition among learners for recognition

Cognitive Strategies: an Overview

Cognitive science, although a relatively new field, (about 30 years old) has revealed a number of strategies that suggest how people think and learn. For a more detailed discussion, see Schank and Cleary (1995). The following summary comes from this reference, pp. 26-43.

Intelligence, or human reasoning, seems to be based on a few basic structures:

- human reasoning is often case-based, rather than rule-based.
- the central process in case-based reasoning is reminding.
- we build generalizations, or knowledge structures, by drawing on our rich case base
- a rich case base is built through experience with many cases and the testing of hypotheses about these cases
- learning is the dynamic modification of memory. That is, memory is changed by each use, each experiment with cases.

Basically, humans learn through experimentation with the real world, rather than by memorizing a list of rules. This statement has implications for the design of instruction:

Learning opportunities should be based, as much as possible, on authentic tasks and environments, and include opportunities for reflection and application.

The cognitive instructional strategies/learning theories that seem most relevant to us in realizing this goal are the following :

Anchored Instruction

Principles

- developed by the Cognition and Technology Group at Vanderbilt (CTGV)
- focuses on the development of tools that encourage the creation and resolution **of complex, realistic problems**
- video materials serve as anchors or macro-contexts
- instructional activities are designed around an anchor that is case or problem-based
- learning materials allow exploration by the learner

Experiential Learning

Principles

- addresses the needs and wants of the learner
- learning is undertaken in order to solve a problem or engage in a meaningful task
- qualities include: personal involvement, learner initiation and control, learner self-assessment
- significant learning happens when it the task and content are relevant to the learner (and the learner decides this!)
- learning takes place in a low-risk environment
- self-initiated learning has a longer shelf-life

Lateral thinking

Principles

- the generation of novel solutions to problems
- learners may require, and have to develop, a different perspective to solve problems successfully
- involves the recognition of dominant ideas that polarize thinking (for example, cultural bias)
- goal is to achieve a solution by trying different perspectives
- problem elements are broken down and recombined
- randomness is valued

Situated Learning

Principles

- learning occurs as a function of the activity, context, and culture in which it occurs, or is situated
- social interaction is key to situated learning
- learning tasks should be presented in an authentic context
- learning requires social interaction and collaboration
- learning is encouraged when *scaffolding* opportunities are available.

That is, as learners engage with experts, they build on their knowledge and understanding until they become experts themselves in the *community of practice*

Social Development Theory

Principles

- Vygotsky believes that social interaction is vital to cognitive development
- all the higher-order functions (language, concept formation, etc.) originate as the relationships among individuals
- Vygotsky's theory is key to the theories of situated cognition and anchored instruction
- social interaction is essential to cognitive development

Mental Models

Principles

- people develop mental models in order to understand certain phenomena.
- models contain "hierarchies" and are clustered into categories.
- they are dynamic, subject to change, sometimes contain errors, and are more simplistic than the actual phenomenon.

In the next section, Schank and Cleary's Five Teaching Architectures are presented alongside several of these strategies from the learning theory literature. Starting on page 14, these strategies will be represented as key elements in the conceptual frameworks for Web-based instruction introduced on page 7.

Cognitive Theory: Implications for Design Practice

Theory	Key Elements	Learning Domain
Anchored Instruction	• the creation and resolution of complex, realistic problems • based on familiar anchor or trigger	• Concept learning • Engineering • Mathematics • Problem-solving
Experiential Learning	• meaningful tasks • low-risk environment • based on problem-solving • degree of personal interaction	• Engineering • Management • Sales • Sensory-motor skills
Situated Learning	• social interaction, collaboration • realistic contexts • learning as function of context • social interaction	• Language learning • Management • Sales • Sensory-motor skills • Medicine
Lateral Thinking	• problem-solving • multiple perspectives • random generation of ideas • leading to novel solutions	• Management • Mathematics • Problem-solving • Reasoning • Troubleshooting • Medicine

Social Development	• Social interaction key to congnition • based on interpersonal relationships • coaching, modeling, imitation	• Engineering • Language learning • Management • Sales • Reading • Sensory-motor skills
Mental Models	• hierarchies • dynamic, contain errors • simplified from real phenomenon	• Language learning • Procedural learning • Mathematics

Five Teaching Architectures and Key Cognitive Strategies

Schank and Cleary (1995) have developed a model, particularly relevant to computer implementation, which they call teaching architectures. As you read through the brief overview of each, note how key features of elements overlap several different architectures.

1. Simulation-based Learning by Doing

Humans learn by doing. Learning a new skill, then, would ideally include practice with the actual skill, accompanied by coaching, advice, and correction by an expert. The very nature of simulations requires active participation y the learner, who may sometimes 'enter in' to the simulated world as an actual participant.

2. Incidental Learning

Much information to be learned is not inherently interesting (think of the multiplication tables). Lists and facts are learned naturally, however, by engaging in fun tasks whose outcomes are interesting. In this design the base facts are imparted almost covertly.

3. Learning by Reflection

This strategy is appropriate when learners need to ask questions about their learning or need someone off whom to 'bounce' their ideas. In this case, the instructor (who could be virtual) helps the

learner analyze the problem and find ways to continue in their progress.

4. Case-based Teaching

Imparting information at the precise moment of need has been recently dubbed just-in-time learning. In this architecture, learners may consult an expert when experiencing difficulties or out of curiosity. Experts , by virtue of their expertise in a field, have a large repository of stories to tell, or cases, which illustrate key learning elements relevant to the task at hand.

5. Learning by Exploring

When learners become involved in their new tasks, they naturally generate questions. These questions are optimally answered at the time they are generated. The key to this architecture is conversation, either virtually or in face-to-face interaction

Teaching Architectures: Implications for Design Practice

Architecture	Key Elements	Use When...
Simulation based	• learning by doing • Active engagement	• subject matter is experiential
Incidental	• imparting dull or rote information in the context of an interesting task or experience	• incidental information must be imparted • outcome based on the learning of a knowledge base at a lower level of congnition

Reflection	• asking critical questions about one's own learning	• interaction with a coach or expert is desirable • self-assessment is expected
Case-based	• experts have a database of cases • just-in-time learning • typically in the form of stories	• the learner is expected to make errors or experience failures • new information is imparted as the task unfolds • learners would benefit from the presence of an expert who can tell stories about own experience
Exploration	• learners' questions are answered as they arise • conversation-based	• a running conversation with either peers or experts is planned • task can be contextualized as a 'world' or environment to explore on own • learner is placed in role of apprentice

Web-based Instructional Environments

Six Conceptual Frameworks

Jerome Bruner is largely credited with the emergence of *constructivism*, a

theory of learning and instruction that encompasses cognitive learning theories.

Bruner postulates that learning is an active process, during which learners construct new ideas based on their current understanding and perspectives. They do this by selecting, then transforming information by organization, elaboration, scaffolding, and other cognitive strategies.

During this process, the instructor (who may be virtual) engages the student in a conversation to help him/her build upon existing knowledge structures.

Bruner recommends that curriculum be organized in a spiral so that this building process is facilitated and enhanced with each turn.

The main principles of *constructivism*, from a design point of view, are that:

1. Instruction be concerned with the experiences, convictions and constructs that learners already possess
2. Instruction be structured so that it can be easily understood and modified by the learner.
3. Instruction be designed to facilitate exploration, extrapolation, and elaboration.

The following six frameworks contain all these principles and, like the teaching architectures proposed by Schank and Cleary, overlap each other in many important aspects.

On page 24 you will find a semantic map representing the 3 frames discussed in this document. I have attempted to link related concepts in a way that resembles the hypermedia environment, underlining the idea that learning and designing are complex activities that draw on many perspectives and activities. Why not take the opportunity to recreate this mind map from YOUR own worldview?

Framework 1:

Multiple Representations of Reality

Description

- an environment or context is created
- the learning task is encountered and structured within the context
- the environment may be viewed from many different perspectives or by peeling back layers
- is sometimes called a *microworld*
- learners enter the world and act from within it

Key Instructional Elements

- the learner participates in the world
- the learner may take on a role within the world
- the goal is for the learner to experience reality from another perspective
- the world may contain surprises; will certainly contain problems to be solved
- a reflective component requires the learner to re-construct the experience
- the learner's values and experiences and legitimated

Media Elements

- text may be used but is very flat
- video and audio bring the context closer to reality
- virtual reality environments

Examples

- Hedberg and Harper at the University of Wollongong have created three microworlds: *Investigating Lake Iluka*, *Exploring the Nardoo*, and *Backstage Pass*
- in the latter, learners explore backstage and then create their own performances using various media elements
- learners may compare their performances to those of professional designers/producers
- researchers at M.I.T. have created a virtual reality experience for children called N.I.C.E.
- children interact and collaborate globally to plant and maintain a garden

- integrated Web site shows a running narrative which may be altered by any participants on the Web

Framework 2:

Authentic Tasks

Description

- learners encounter new information in the context that most resembles how it will be used in real life
- anchored instruction as a strategy

Key Instructional Elements

- context is developed which resembles real-life context (for example, learning to change the oil by working on a 'real' car in a mechanics shop)
- incidental learning opportunities occur as learners work through the task to a resolution. That is, the learner chooses information as needed to complete the task.
- mentors are often provided

Media Elements

- interactive multimedia
- computer-based simulations and modeling
- 'canned' expert lectures or advice
- conferencing

Examples

- frog dissections and other laboratory experiences

Framework 3:

Real-World, Case-based Contexts

Description

- problems, cases, or critical incidents provide the anchor or impetus
- cases must closely resemble real-life events
- cases must reflect the needs and wants of the learners
- learners either:

    a. acquire new information as needed to solve the case, or
    b. learn a set of heuristics (rules first, then are presented with a problem that uses those principles

Key Instructional Elements

- a coach or mentor is provided
- advice is given as needed
- learners may or may not choose to receive advice
- contexts are real
- learner is a novice or apprentice (cognitive apprenticeship)
- lateral thinking may be included as a strategy

Media Elements

- text-based or multimedia
- advice may be 'canned' and always available, or
- available synchronously through chat rooms, or conferencing systems or
- available asynchronously through CMC

Examples

- Continuing Pharmacy Education's (University of Alberta) PharmaLearn courses, which include Web-based or text-based cases, video elements,, collaborative work groups, and expert mentoring/facilitation through CMC

Framework 4:

Fostering Reflective Practice

Description

- has encouraged much interest in the concept for teaching and learning in general.
- This framework seeks to include opportunities, built right into the instructional materials, for learners to ask questions about their new learning
- Learners are encouraged to re-trace their steps to re-form new understandings or existing conclusions.
- requires higher-order thinking skills

Key Instructional Elements

- opportunities are provided to pause the instruction (learner control)
- learners can access experts or coaches throughout the instructor
- the instructor's role is facilitative - to ask the questions, rather than give the answers
- often includes advance organizers, embedded questions, feedback on practice, narrative activities/journal writing
- learners may be able to try different solutions to a problem and evaluate their results, i.e. metacognitive strategies
- process is as important as content ("how did you arrive at that conclusion...?")
- defense of practice
- *what if* scenarios

Media Elements

- note-taking facility
- creation of study guides (wizards...)
- expert narrative available
- conferencing
- shared work documents
- MOOs, MUDs

Examples

- a high school project (U.S.) in which students participated in a graphical MOO
- students chose *avatars* that represented a new persona, for example, a white girl may have chosen to be a white boy or someone of a different age, culture, religion, with a disability, etc.

- hypotheses were created
- students entered the virtual world of the MOO in character, and stayed in character as they interacted with others in the environment
- during (real) class time students shared their experiences, revised their hypotheses, and
- wrote narrative accounts that reflected new understanding about how people are seen and treated in American society
- *The Right to Die* in which learners must gather information from physicians, theologians, ethicists, family members, and others to make recommendations about assisted suicide

Framework 5:

Knowledge Construction

Description

- the basis of all constructivist environments
- based on the premise that learners already bring knowledge (schema), experience, and values to the task
- the learner's schema are valued and provide the foundation on which new knowledge can be built
- instruction is designed to 'tap in to' the existing knowledge base and to encourage the learner to overtly use this base as they progress through a task

Key Instructional Elements

- *situated learning* is one cognitive strategy that is closely related
- in s.l., learning is a function of the activity, context, and culture in which it occurs
- - social interaction is a critical component as students become involved in a community of practice which embodies certain beliefs and behaviors to be acquired
- cognitive apprenticeship is an affective strategy here
- the learner is asked to share mental models with peers and experts in this community
- new products are created: art, music, writing, models, cities, etc.

Media Elements

- real contexts in which learning takes place
- simulated workplaces
- video and graphical images that respond to manipulation
- audio can be effective but should be optional
- learners must 'act on' the environment (building something, starting a system, etc.)
- ways to create new products

Examples

- again, the *Frog Dissection*
- many environmental sites encourage learners to become seismologists, astronomers, weather experts, etc.
- these sites are often involved in K-12 projects in which children are placed on a team of experts from the field, making real contributions to the work of the team

Framework 6:

Collaborative Learning

Description

- learners are placed in collaborative workgroups to solve a problem together through conversation and negotiation
- involves sharing and valuing the perspectives of others
- based on the Cooperative Learning models described by Slavin and Johnson, Johnson, and Holubec

Key Instructional Elements

- social interaction; negotiation
- conversation
- shared work space and tools
- a common project to which all are accountable for success
- sharing of leadership and expertise - interdependency
- sometimes, access to a facilitator

- may include the process of *scaffolding*, in which learners use expert knowledge to build upon their own schema

Media Elements

- tools for shared communication
- tools for collaborative work (shared screens, etc.)
- resource base (or database) of information, elements, etc.

Examples

- students work together to build a structure in several architecture sites

Learning Activities that Inspire Critical Thinking

This is just a list of terms and ideas encountered often in reading and discussing instructional design for active learning. Future versions of this workshop will provide links to related strategies and sites.

- embedded questions
- simulations
- case studies, problem-based learning
- CMC
- metacognitive strategies (guided note-taking) e.g. creating own study guide placing new knowledge into a 3D model of the 'world'
- putting collected data into a personal 'scrapbook' (Hedberg & Harper, 1997)
- developing a student portfolio
- selecting and evaluating resources
- creating checklists or evaluation schema
- creating a model
- conducting an interview
- creating an 'expert' lecture
- taking sides, becoming the expert, defending position
- taking a journey through a new environment and exploring all aspects
- working collaboratively to socially negotiate tasks
- MOOs and MUDs - choose avatars to represent and/or define world views and/or cultural antecedents

Six Conceptual Frameworks: Implications for Design Practice

Theory	Multiple Realities
Key Elements	• learner experiences reality from another perspective • a reflective component requires re-construction of experience • the learner's values and experiences are legitimated
Use when...	• goal is development of different perspectives • there is an element of curiosity • too complex • a reflective component is important
Example site	PennMOO: telnet://ccat.sas.upenn.edu:7777/

Theory	Authentic Contexts
Key Elements	• anchored instruction • real contexts and tasks
Use when...	• task can be related to the real world of practice • content domains are affective or psychomotor • cognitive apprenticeship is sought
Example site	The Real Scoop: http://www.itdc.sbcss.k12.ca/uscurriculum.tobacco.html German for Beginners: http://castle.uvic.ca/german/149

Theory	Case-based
Key Elements	• cognitive apprenticeship • lateral thinking • story-based
Use when...	• instruction based on simulating real practice (e.g. flight simulators) • rich repository of expert stories available • access to a coach or facilitator
Example site	Personal Trainer: http://www.itdc.sb.css.k12.ca.us/curriculum/persontrainer.html Nuclear Power Plant Demo: http://www.ida.liu.se/~her/npp/demo.html

Theory	Reflective Practice
Key Elements	• access to experts/facilitators • questioning own practice
Use when...	• the process is important • learners would benefit from conversation with others • instruction is affectively-based • learners have access to a facilitator
Example site	Boethius: http://ccat.sas.upenn.edu/jod/boethius.html

Theory	Knowledge Construction

Key Elements	• situated learning • social interaction is key
Use when...	• learners are to arrive at a new point of view • problem-solving is a goal • personal knowledge base includes incidental knowledge on which to build • there are opportunities for dialogue in groups
Example site	World Cultures: http://www.kn.pacbell.com/wired/bluewebn/hot.html

Theory	Collaborative Learning
Key Elements	• negotiation through conversation • interdependency, accountability to peers
Use when...	• learners will work in small groups • a product is to be created • to teach social/communicative skills • when the content is complex
Example site	Biodesigns Inc.: http://www.itdc.sbcss.k11.ca.us/curriculum.biodesigns.html Dalton Astronomy Internet Project: http://www.nltl.columbia.edu/groups/Astro/wwwimages/PROJPAGE.html

Active Learning: Exemplary Sites

Site Name	Project Bio

URL	http://biotech.zool.iastate.edu/Project_BIO/Homepage.html
Description	Iowa State University through a program called Project BIO is offering on-line biology courses that feature extensive use of audio in on-line lectures. The lectures consist of.

Site Name	New Tools for Teaching
URL	http://ccat.sas.upenn.edu/teachdemo
Description	This site introduces, describes, and exemplifies Internet-based resources for teaching.

Site Name	Strategic Management Class
URL	http://www.lehigh.edu/~ddm2/m301.html
Description	Senior-level strategic management course.

Site Name	Works in Progress
URL	http://www.oit.itd.umich.edu/WIP.html (URL no longer active)
Description	"Works in progress" at U. Michigan including multimedia databases, tutorials, simulations, gaming, interactive role playing, case studies, etc.

Site Name	Living Things - An Invitation to Collaboration
URL	http://www.fi.edu/tfi/units/life/

Description	The "Living Things" unit offers resources related to a wide spectrum of topics in life science. You'll also find tools for communicating and collaborating with other educators around the world.

Site Name	Project SkyMath: Making Mathematical Connections
URL	http://www.unidata.ucar.edu/staff/blynds/Skymath.html
Description	The University Corporation for Atmospheric Research (UCAR) has prepared a middle school mathematics module incorporating real-time weather data. The goal of the pilot project is to demonstrate that acquiring and using current environmental and real-time weather data will promote the teaching and learning of significant mathematics

Site Name	Whale Songs
URL	http://www.ot.com/whales
Description	Whale Songs, an educational center about people and whales, is presented in conjunction with the International Fund for Animal Welfare's research vessel, Song of the Whale. Educational resources include Action Painting, Journal Writing, and Whale Form and Function

Site Name	Architectonics
URL	http://darkwing.uoregon.edu/~struct
Description	This site contains lectures, example problems, case studies, structural typologies, essays, links, animations, movies, suggested readings and more

Site Name	Virtual Earthquake
URL	http://vflylab.calstatela.edu/edesktop/VirtApps/VirtualEarthQuake/VQuakeIntro.html
Description	Virtual Earthquake (VEQ) is a web-based application that allows anyone with Internet access to become a "virtual seismologist." Users interpret simulated seismograms from three seismic recording stations in an effort to triangulate the location of an earthquake's epicenter. The user's results are plotted on a map and compared to the actual results

Site Name	A Right to Die?
URL	http://www.routledge.com/routledge/indepth/dax_main.html
Description	Students of ethics and medicine are challenged to decide whether or not they agree with the patient's wish to stop his painful treatment and die. They are then presented with conflicting arguments.

Site Name	Exploring the Environment
URL	http://cotf.edu/ETE
Description	NASA site presenting environment earth science modules that make use of remote sensing. Goal is to engage learners in collaborative science inquiry.

Site Name	Family Tree Mail: Language Translation Site

URL	http://www.gsn.org/gsn/proj/ftm/index.html
Description	Children use language translation software to communicate on a real task

Site Name	NOVA: Odyssey of Life
URL	http:/www.pbs.org/wgbn/pages/nova/odyssey/textindex.html
Description	Learners take a virtual tour of microscopic organisms living in the body. Interviews with experts.

Site Name	Rivers of Life: Mississippi Adventure
URL	http://cgee.hamline.edu/rivers/
Description	Real time collaborative project as students living by flooding rivers in Minnesota and Wisconsin posted daily reports and photographs. Interactions with river experts and others around the world.

Site Name	International Symposium on Environmental Issues
URL	http://www.itdc.sbcss.k12.ca.us/curriculum/ozone.html
Description	Collaborative problem-solving project involving interactions with experts and peers in North America and elsewhere.

Site Name	Victorian Web

URL	http://www.stg.brown.edu/projects/hypertext/landow/victorian/victov.html
Description	Students can explore how the social context, economics, religion, philosophy, visual arts, and literature of the period might be interrelated.

Sites for Web/Course Design

Type	Book
Name	Internet Publishing Handbook
URL	http://www.sscnet.ucla.edu/ssc/franks/book/
Description	Everything you wanted to know about publishing sites on the Web.

Type	Book
Name	Web-Based Instruction
URL	http://www.utb.edu/~khanb/wbitc.html
Description	

Type	Web Forum
Name	DeLiberations (on Teaching and Learning): A Website Forum
URL	http://www.lgu.ac.uk/deliberations
Description	A discussion in which participants contribute to a greater understanding of how the Net can enhance education by improving communication.

Type	Opinion Column
Name	The Alertbox
URL	http://www.useit.com/alertbox/9705a.html
Description	Issues such as GUI vs. interface design

Type	Opinion Column
Name	Design for Web-based Learning
URL	http://www.nova.edu/~duchaste/design.html
Description	A design model is proposed.

Type	On-line Journal
Name	The Spider's Web
URL	http://www.InContext.ca/spidweb/
Description	Sites, tools, columns, interviews, etc. - all about Web design

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Name	The Spider's Web
URL	http://www.InContext.ca/spidweb/
Description	Sites, tools, columns, interviews, etc. - all about Web design

Type	On-line Journal
Name	New Chalk
URL	http://www.unc.edu/courses/newchalk

Description	An online magazine featuring uses of technology by faculty at the University of North Carolina at Chapel Hill. New issues bi-weekly.

Type	Systems Evaluation Sites
Name	Comparative Analysis of On-line Educational Systems Application
URL	http://www.douglas.bc.ca/~landonb/dt/dthome.html
Description	Evaluation model from BC site

Type	Systems Evaluation Sites
Name	University of Manitoba
URL	http://www.umanitoba.ca/ip/tools/courseware
Description	A site comparing development models and four systems (Lotus Notes/Learning Space, WebCT, Toolbox and Top Class

Type	Listserv, Newsgroup
Name	WWWDev
URL	http://www.unb.ca/web/wwwdev/
Description	The World Wide Web Courseware Developers Home Page contains information of interest to persons developing courseware that is to be delivered in part or totally over the WWW.

Type	Guides and Guidelines
Name	Apple Web Design Guide

URL	http://applenet.apple.com/hi/index.html
Description	Advice on computer/human interface, Web design guidelines, and so on.

Type	Guides and Guidelines
Name	Constructivist Project Design Guide
URL	http://www.ilt.columbia.edu/k12/livetext-nf/webcurr.html
Description	Teachers College at Columbia University: projects and guidelines for design

Type	Guides and Guidelines
Name	Staffordshire University Computers in Teaching and Learning
URL	http:/www.staffs.ac.uk.cital.main.htm
Description	everything related to the use of information technology in teaching and learning

Type	Guides and Guidelines
Name	Technology Tools for Today's Campuses
URL	http://sunsite.unc.edu/horizon
Description	72 articles include important and useful information that you can use in deciding if you want to use such tools as Listservs, e-mail, the World Wide Web (WWW), or multi-user domains (MUDs) in your teaching. Each article has links to such illustrative material as syllabi, student papers written on the Web, and informative references regarding the use of productivity tools.

Type	Guides and Guidelines
Name	Teaching and Learning on the WWW
URL	http://www.mcli.dist.maricopa.edu/tl/
Description	Levine offers another Web page of links to examples of courses that use the Web. He then continues to explain some of the challenges and some useful options associated with creating and maintaining such a Web site.)

Type	Guides and Guidelines
Name	Yale Web Style Manual
URL	http://info.med.yale.edu/caim/StyleManual_Top.HTML
Description	This manual describes the design principles used to create the pages within the Center for Advanced Instructional Media's (C/AIM) World Wide Web site.

Type	Guides and Guidelines
Name	Web Page Design
URL	http://ds.dial.pipex.com/pixelp/wpdesign/wpdintro.shtml
Description	Not an HTML guide. Advanced designers.

Type	Guides and Guidelines
Name	Net Tips for Writers and Designers
URL	http://www.dsiegel.com/tips/index.html

Description	Whether you're a home (page) maker, an e-mailer, or a web site graphic designer, these tips will help you be a better communicator on the Net.

References

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Appendix A

A. Sites

Adult Learning Styles and Preferences for Technology Programs
http://www2.nu.edu/nuri/llconfconf1995birkey.html

Adult Learning Online
http://www.cybercorp.net/~tammy/lo/oned2.html

Bibliography of Electronic Sources: MOOs
http://www.cas.usf.edu/english/walker/bibliog.html

CMC Magazine
http://ccwf.cc.utexas.edu/~mcmanus/wbi.html

Combining Pedagogical and Technological Paradigms for Educational Software
http:advlearn.lrdc.pitt.edu/papers/chi96rs.html

Delivering Instruction on the World Wide Web
http://ccwf.cc.utexas.edu/~mcmanus/wbi.html

Design for Web-Based Learning
http://www.nova.edu/~duchaste/design.html

The Human Element in Collaborative Hypertext

http://eies.njit.edu/~turoff/Papers/cscwhy.htm

Mediated Learning Review
http://www.academic.com/mlreview/

Open Learning Technology Corporation
http://www..%20olt.edu.au/

Ownership for Learning...
http://condor.depaul.edu/~jsavery/adeta/

Phoenix: A Web-MOO Client
http://bio-3.bsd.uchicago.edu/Staff/Web_Notes/MOO-WWW.html

Principles of Good Practice
http://www.wiche.edu/telecom/principles.htm

Theory into Practice Database
http://www.gwu.edu/~tip/

B. Articles

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Kozma, R.B., & Johnston, J. (1991). The technological revolution comes to the classroom. *Change*, 23(1), 10-23.

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Learning Web Design has a friendly style and great explanations of what web pages are, how they work and how to make them. It drills deeply into HTML, CSS and web images. And it touches on javascript and other topics you'll need to know if you continue to work in web design/development. More important to me and my very visual students, the book is well designed (a rarity in books about web design/development). The page layout and images used make the book's information easier to understand and make the book fun to sit down and read. Learning Web Design is a great tool for my students â€œ Learn to light a candle in the darkest moments of someoneâ€™s life. Be the light that helps others see; it is what gives life its deepest significance. â€ â€• Roy T. Bennett. Similar Free eBooks. Filter by page count 1-24 Pages 25-50 Pages 51-100 Pages 100+ Pages. Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics.Â theyâ€™ll download as quickly as possible Learning Web Design: A Beginner's Guide to JavaScript: JavaScript For Beginners - Learn JavaScript Programming with ease in HALF THE TIME - Everything about the Language, Coding, Programming and Web Pages You need to know. 115 PagesÂ·2017Â·578 KBÂ·109,837 DownloadsÂ·New! JavaScript: JavaScript For Beginners - Learn JavaScript Programming with ease in HAL Learning web design is a long-term task that is full of challenges. You need to challenge yourself seriously. Make up your mind right now and make plans based on the learning guides that we introduce in this article. Remember that you will make it on your own if you start learning web design through practice. So be ready! Step 2: Get a basic understanding of web design. "How can I start learning web design?"Â Follow web designers you aspire to learn from on social media sites such as Twitter, Dribbble, Behance, Github, and other platforms where they are active. Read their posts, click on the like button for those which you appreciate, and comment if you wish to add a point or ask a question . If you are lucky, you can find yourself a mentor in an online community or group. Web Technologies. HTML. CSS.Â Active Learning is a special case of Supervised Machine Learning. This approach is used to construct a high performance classifier while keeping the size of the training dataset to a minimum by actively selecting the valuable data points. Where should we apply active learning? We have a very small amount or a huge amount of dataset. Annotation of the unlabeled dataset cost human effort, time and money. Web design is a rapidly changing environment â€” new techniques and technologies are constantly emerging, and as a web designer or developer, you have to be constantly learning to keep up. When it comes to education, web designers donâ€™t have a shortage of online and offline courses. But there is one thing that makes online education great â€” it lets you learn at your own pace. In this article, weâ€™ve decided to create an overview of the best places to take web design courses online as well as a list of courses you should consider. Weâ€™ve listed the courses in the context of educational platforms be