Susan Sharpless Smith has thoroughly updated Web-Based Instruction: A Guide for Libraries to cover new tools and trends, including current browsers, access methods, hardware, and software. She also supplies tips to secure project funding and provides strategic guidance for all types of libraries. This completely revised edition also

- Builds Web instruction advice on a foundation of the latest research in how learning takes place
- Translates technical Web-speak into plain English, so even nonexperts can make effective use of the Web in their teaching
- Includes an accompanying Web gallery, providing examples of screen shots and links to exemplary programs
- Shows instructors best practices for incorporating the Web into teaching

A proven winner, this newly revised hands-on manual remains indispensable. Librarians facing the challenge of creating a Web-based instruction program will find easy-to-understand guidance to deliver a productive and memorable experience.

Visit the book’s website for additional material: www.ala.org/editions/extras/smith10566.

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WEB-BASED INSTRUCTION, THIRD EDITION

A GUIDE FOR LIBRARIES

SUSAN SHARPLESS SMITH

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Conversations about the use of educational technology in the classroom and inductive environment take place with regularity. It would be easy for me to take for granted that readers are already well acquainted with the terms and meanings associated with web-based learning. Rather than making that assumption, this chapter introduces and discusses some of the basic concepts that are involved in web-based learning. This chapter is meant to provide not comprehensive coverage of the various topics but a brief introduction. The resources section in the appendix points readers to more in-depth coverage of topics.

HISTORY OF WEB-BASED INSTRUCTION

In the years since the introduction of the World Wide Web in 1993, the use of the Web to deliver instruction has increased immensely. In 1997, Khan first defined web-based instruction (WBI) as “a hypermedia-based instructional program which utilizes the attributes and resources of the World Wide Web to create a meaningful learning environment where learning is fostered and supported” (Khan 1997, 6). However, it may be useful to review where WBI came from in relation to other concepts that preceded it.

When many people first think about web-based instruction, they immediately picture instruction that takes place without the restrictions of time and place. They visualize that, in such instruction, an instructor makes materials available so that students can access them from anywhere and at any time. This model has its beginning in what is traditionally thought of
as distance education. Distance education, in some form, has been around for a long time, although it has become known by that name only recently. As it has evolved, so have the factors that define it. Zvacek (2004) specifies the components of distance education:

- physical distance that separates teachers and learners
- use of mechanical or electronic means to deliver content
- interaction between teachers and learners
- the influence of a formal educational organization that outlines the roles of the participants, expectations, and expected outcomes

Using these criteria, it is easy to see the variety of instructional methods that distance education includes: correspondence courses, videotaped classes, and audio classes in which students and instructors communicate by telephone are just a few examples. As technology has advanced and come to be used to deliver distance instruction, improvements in interaction and delivery have followed. Interaction between an instructor and students is much harder to maintain via a print-based correspondence course than it is via Internet technologies. Zvacek (2004) also identifies three guiding principles that frame the purpose of distance education:

1. To provide educational opportunities for unserved or underserved populations
2. To save money (particularly in corporate training)
3. To offer a wider variety of courses to students than would be possible in one physical location

TEACHING WITH WEB-BASED TECHNOLOGY

There are a number of different broad categories that can be considered in discussions of web-based instruction approaches. And the choice of approaches certainly isn’t between just face-to-face and distance learning. The common thread among the categories is that computer-based technologies play a central role. The three broad categories to consider are augmented, blended (distributed, hybrid), and online (distance) (Siemens and Tittenberger 2009).

Augmented

In the “augmented” category, web-based instruction is used to extend the physical classroom in order to supplement face-to-face instruction. The
online component may be incorporated into activities during class time or used to accomplish assignments outside of scheduled class periods. In this model, students meet with instructors in classrooms on a regular schedule. Some common tools used in this category are online discussion forums, WebQuests, blogs, group work in wikis, and online quizzes.

**Blended Learning**

You will hear different terms for the second category: *blended, distributed*, and *hybrid learning* are used interchangeably. Blended learning is a method of instructional delivery that includes a mix of web-based instruction, streaming video conferencing, face-to-face classroom time, distance learning through television or video, or other combinations of electronic and traditional educational models. Although blended learning can be implemented in a combination of ways, it always accommodates a separation of geographical locations for part (or all) of the instruction and focuses on learner-to-learner as well as instructor-to-learner interaction. A typical model for blended learning might involve an initial face-to-face orientation followed by a period of online classes and then a face-to-face wrap-up class.

**Online Learning**

In the “online” or “distance” category, all instruction takes place remotely, either synchronously or asynchronously. Distance learning is often associated with adult learning because it is a model that has the flexibility to fit into busy lives better than traditional models of instruction. For those people with full-time careers and families, there are real benefits to educational opportunities that they can adapt to daily responsibilities. Adults also tend to adapt more readily to the independent structure of distance education and the self-motivation it requires.

**THE INTERNET AND THE WEB**

The pervasiveness of the Internet has provided the opportunity to expand the capabilities of conducting instruction outside the classroom. According to Internet World Stat’s usage statistics (www.internetworldstats.com/stats.htm), as of fall 2009, there were 1.7 billion Internet users worldwide. A 2003 analysis of Internet use by children three years old through grade 12 concluded that 59 percent used the Internet, and for grade 9–12 students only, that figure was 79 percent (DeBell and Chapman 2006). The Educare Center for Applied Research’s 2009 Study of Undergraduate Students and Information Technology reported that nine of ten respondents used the

Internet for at least some academic work, and 79.5 percent chose to learn by running Internet searches (Smith, Salaway, and Caruso 2009).

These types of statistics illustrate why the incorporation of web-based instruction is an attractive option. Today’s learners are adept at using the Web to discover and learn. The Web holds a number of implications for learning environments and students (Oblinger, Barone, and Hawkins 2001):

*Exploration:* Today’s students use the Web as an exploratory tool to find information and resources.

*Experience:* The Web offers wide-ranging learning experiences, from synchronous learning to threaded discussions to self-paced study.

*Engagement:* The Web captivates learners by enabling creative approaches to learning that foster collaboration and sense of community.

*Ease of use:* The Web is easy to use for both learners and learning providers. Content is platform independent.

*Empowerment:* The Web allows for tools that enable learners to personalize content and choose the way they learn best.

*Effectiveness:* A growing body of evidence shows that blended learning can be more effective than classroom lectures.

**WHAT IS INCLUDED IN WEB-BASED INSTRUCTION?**

Web-based instruction “encompasses the integrated design and delivery of instructional resources via the World Wide Web and promotes student engagement with text-based, hypermedia, multimedia, and collaborative resources for the purposes of teaching and learning” (Bannan-Ritland 2004, 638). As Web technologies have evolved, the possible approaches to design and delivery have expanded considerably. For example, WBI can be used to perform basic support functions, such as the provision of a repository of student resources, including a course syllabus, assignments, and instructor notes. But that repository can be much more with the incorporation of multimedia, which can engage students with streaming video, audio, and simulations and animations.
MEDIA

Many types of media can be used in the delivery of educational content, ranging from printed text to analog audio or video and digital multimedia. In this book, discussions revolve around the use of digital media as it can be deployed over the Web. However, it is important to understand the main characteristics of transmitting multimedia. Bates and Poole (2003) identify major distinctions in the technologies used to transmit digital multimedia:

*Broadcast versus communication technologies:* A broadcast is a one-way technology that moves information from the producer to the receiver but doesn’t include a mechanism for two-way interaction. In contrast, communication technologies facilitate equal communication back and forth among all participants.

*Synchronous versus asynchronous technologies:* Synchronous technologies operate in real time; all parties must participate simultaneously. Asynchronous technologies allow participants to choose a time and place convenient to them.

Figure 1.1 shows how different digital multimedia technologies fall into the two frameworks of broadcast versus communication and synchronous versus asynchronous.

---

**Figure 1.1**

**DIGITAL MEDIA AND TRANSMISSION TECHNOLOGIES**

<table>
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<tr>
<th>Broadcast (One-Way) Applications</th>
<th>Communication (Two-Way) Applications</th>
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<tr>
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<td>Synchronous</td>
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*Source:* Adapted from Bates and Poole (2003, 55).

**PEDAGOGY**

The basic definition of *pedagogy* is “the art of teaching.” It is important to understand that effective web-based instruction starts with instructional strategies based on theories of learning and transforms them to work in the web environment. Reeves and Reeves (1997) present a model of ten pedagogical dimensions of interactive learning that illustrate important values to be analyzed when creating instruction. Each dimension reflects a spectrum:

*Pedagogical philosophy—Instructivist ↔ constructivist.* The instructivist approach assigns the learner to the role of passive recipient of instruction. The constructivist approach focuses on the learner who constructs knowledge on the basis of previous knowledge and experience.

*Learning theory—Behavioral ↔ cognitive.* Behavioral psychology is a learning theory in which the use of stimuli, feedback, and reinforcement shape behavior. There are many examples of this approach found in today’s WBI. A tutorial contains instructional material in a presentation, followed by a short quiz with feedback provided depending on the student’s responses. The cognitive end of this spectrum places emphasis on internal mental states and incorporates a variety of learning strategies, including memorization, direct instruction, deduction, drill and practice, and induction, depending on the type of knowledge that the learner is constructing.

*Goal orientation—Sharply focused ↔ general.* The goals for any given educational experience can vary from sharply focused, such as learning a specific medical procedure, to more general, higher-ordered ones, such as motivation of employees. Different goals call for different tactics.

*Task orientation—Academic ↔ authentic.* Historically, instruction has occurred via academic exercises that do not necessarily offer any context or relevance for learners. A basic tenet of adult learning theory is that context is highly important to learners. With respect to orientation, an academic exercise might be to diagram sentences to learn proper sentence structure, whereas in an authentic learning experience, students would learn through a more practical activity, such as writing a résumé.
Source of motivation—Extrinsic ↔ intrinsic. Motivation plays a role in all learning theories. Extrinsic motivation draws from external sources to motivate—such as working to receive a passing grade. Intrinsic motivation depends heavily on individual learners and what they want to take from the educational experience. It is easier to offer extrinsic than intrinsic motivation. Presenting a way for learners to determine their own outcomes from the instruction is one way to try to intrinsically motivate learners.

Teacher role—Didactic ↔ facilitative. The traditional didactic teacher role is that of sage on the stage—instructors are the possessors of the knowledge that they are to impart to students. The facilitative role is one of being the guide on the side. This approach puts the responsibility for learning with the student; the teacher functions more as a mentor.

Metacognitive support—Unsupported ↔ integrated. Metacognition refers to learners’ awareness of objectives, ability to plan and evaluate learning strategies, and ability to monitor progress and adjust their behaviors according to need. Unlike an unsupported system, which offers no feedback, an integrated system provides a means for students to reflect on their progress, assess their needs, and adjust their learning processes.

Collaborative learning strategies—Unsupported ↔ integral. Web-based instruction can be constructed to disregard or promote collaborative learning opportunities. Using synchronous or asynchronous technologies to allow students to work collaboratively in small groups is one example of integrating this dimension into a learning experience.

Cultural insensitivity—Insensitive ↔ respectful. Because the Web is far reaching, it is important to consider cultural implications when designing web-based instruction. Accommodating diverse cultural and ethnic backgrounds should be a WBI goal.

Structural flexibility—Fixed ↔ open. A fixed system is fixed in time and place, for instance, a traditional class held in a specific room at a specific time. An open system accommodates asynchronous learning, thus permitting greater flexibility in the learning experience.
LEARNING STYLES

People have different preferences for acquiring and processing new information. Some are visual learners and learn best through seeing the material, whether text, charts, or other graphics. Some are auditory learners and prefer to gain knowledge by hearing information first. Still others are kinesthetic learners and do best through experience. There are numerous learning-style classification systems. For instance, Kolb’s (1984) Learning Style Inventory focuses on concrete experience versus abstract conceptualization, reflective observation, and active experimentation. In another example, Gardner (1999) takes a different path and puts forth a theory of multiple intelligences. He proposes that each person has a different biological composition made up of the following intelligences: linguistic (sensitivity to spoken and written language), mathematical-logical (ability to analyze problems logically, calculate mathematics, and investigate scientifically), musical (skill in the performance, composition, and appreciation of musical patterns), spatial (potential to recognize and manipulate patterns of wide space), bodily-kinesthetic (potential to use one’s body to solve problems or fashion products), interpersonal (ability to understand the intentions, motivations, and desires of other people), intrapersonal (ability to understand oneself), naturalist (ability to recognize and classify species), and existential (ability to handle profound questions about existence). Figure 1.2 shows an example of Gardner’s multiple intelligences and potential online teaching strategies to address each type.

No matter what learning style one subscribes to, the Web can accommodate the various types within it.
**Figure 1.2**

**ONLINE TECHNOLOGIES AND MULTIPLE INTELLIGENCES**

<table>
<thead>
<tr>
<th>INTELLIGENCE</th>
<th>DESCRIPTION</th>
<th>ONLINE TEACHING STRATEGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal-linguistic</td>
<td>Preference for reading, writing, and speaking</td>
<td>Web-based research, computer-mediated communication</td>
</tr>
<tr>
<td>Mathematical-logical</td>
<td>Aptitude for numbers, reasoning skills</td>
<td>Problem solving, data analysis</td>
</tr>
<tr>
<td>Musical</td>
<td>Ability to produce and appreciate pitch, rhythms, learns well through song</td>
<td>Music and composition software, multimedia</td>
</tr>
<tr>
<td>Visual-spatial</td>
<td>Visual and spatial stimulation; learners enjoy charts, maps, and puzzles</td>
<td>Web-based presentations, object and document analysis, 3-D modeling</td>
</tr>
<tr>
<td>Bodily-kinesthetic</td>
<td>Good sense of balance and hand-eye coordination; handles objects skillfully</td>
<td>Virtual reality, interactive simulations, whiteboard</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>Ability to detect and respond to moods and motivations of others tries to see things from another's point of view</td>
<td>Collaborative learning, WebQuests</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Uses self-reflection to remain aware of one's inner feelings</td>
<td>Online journaling, reflective assessment</td>
</tr>
<tr>
<td>Naturalist</td>
<td>Enjoyment of outdoors; ability to detect subtle differences in meaning</td>
<td>WebQuests, case studies, virtual field trips</td>
</tr>
<tr>
<td>Existential</td>
<td>Capacity to handle profound questions about existence</td>
<td>Computer-mediated communication, online journaling, authentic learning</td>
</tr>
</tbody>
</table>

One of your primary goals as you start to think about how to develop a web-based library instruction project will be to incorporate the characteristics of good library instruction. What constitutes the best practices? Much research has been done over the years to identify best practices and their characteristics. The Association of College and Research Libraries’ (2006) Best Practices Initiative produced a best-practices guideline for information literacy programs that details specific recommendations in nine categories, which address broad areas including goals, support, and pedagogy. Core characteristics that can be applied at the course level include the following:

- Reflect the desired outcomes of preparing students for their academic pursuits and for effective lifelong learning.
- Establish measurable outcomes.
- Support diverse approaches to teaching.
- Incorporate appropriate information technology and other media resources.
- Include active and collaborative activities.
- Encompass critical thinking and reflection.
- Respond to multiple learning styles.
- Support student-centered learning.
- Build on students’ existing knowledge.
- Link information literacy to ongoing coursework and real-life experiences appropriate to program and course level.

• Recognize and encourage collaboration among disciplinary faculty, librarians, and other program staff.
• Fuse information literacy concepts and disciplinary content.
• Establish a process for course and student assessment.

Is it possible to incorporate these criteria into web-based instruction? Does it make a difference if the instruction is totally online rather than a supplement to face-to-face instruction? As you start to consider how to transfer these characteristics to a new medium, you will find that there are comparable techniques in web instruction that demonstrate the use of best practices. This chapter and subsequent ones identify those techniques and provide examples that illustrate the incorporation of good instruction criteria, including active learning, collaborative learning, and the use of multiple mediums. A main goal of this book is to teach you how to integrate active learning and collaboration into your web-based instruction through the use of social, interactive technologies and how to use graphics, sound, and/or animation to deliver information through more than one medium.

Delivering course-related content, establishing objectives, teaching concepts, and providing ongoing assistance are pedagogical issues that you and your team must build into the instructional design of your instruction. No matter what format it takes, these are issues that every good instructor addresses when developing a class or course.

DEVELOPING EFFECTIVE WEB-BASED LIBRARY INSTRUCTION

The ACRL’s Instruction Section Instructional Technologies Committee (2007) has assembled several tips on the pedagogy of web instruction:

• Outline the objectives and outcomes clearly to establish purpose and realistic expectations.

  Outcomes address the larger overall goal(s) of student learning.

  Keeping this tip in mind helps to avoid the use of technology for technology’s sake.

• Provide a clear, intuitive structure that:

  Reflects the objectives of the instruction
  Allows for different learning styles
  Permits the student to self-pace and remediate

Include active learning techniques to foster student-computer, student-student, and/or student-instructor interaction. Some techniques to consider incorporating include:

- Promoting user-created content
- Developing tools to aid in student self-assessment and feedback
- Providing occasion for discussion
- Creating collaborative opportunities to enhance comprehension of concepts being taught
- Giving attention to information literacy concepts rather than the mechanics of a particular technology so that skills learned will be more transferable to future use.

Incorporate contemporary language and topics, be as succinct as possible, and don’t be afraid to entertain. This strategy will:

- Establish relevance to students’ lives
- Not overwhelm them with verbiage
- Help to keep their interest

Provide multiple ways for students to communicate with the instructor and subject experts such as librarians.

Whenever possible, make instruction course related so that it:

- Provides context for the concepts being taught
- Makes the material more relevant to the student

WHAT TYPES OF LIBRARIES ENGAGE IN WEB-BASED INSTRUCTION?

Academic libraries come to mind most often when the subject of library instruction is discussed simply because the concept originated in academia more than a century ago. It was in the academic environment that it developed and matured. Undoubtedly, most of the literature available on the subject focuses on the academic library’s research into and experiences with the subject. However, in today’s complex world of information overload, it is not practical (or prudent) to expect students to wait until their college years to learn information literacy skills. Nor should adults without postsecondary education have to struggle to understand how to
find, evaluate, and use information in the most effective manner possible. So, unsurprisingly, other types of libraries are turning to the Web to meet the needs of their constituents.

As is true with the academic library, the school library media center plays an important role in educating students about information literacy. Library media specialists and teachers collaborate to integrate information literacy skills into the school curriculum.

Public libraries have become the place where people expect to be able to find online access. As of 2007, 98.9 percent of public libraries provided that service. As might be expected, patrons also turn to public library staff for instruction on how to use technology and the Internet. A study by the National Commission on Libraries and Information Science also showed that 74 percent of public libraries provide technology-training services of some form, which includes the 48 percent of libraries that teach information literacy skills and the 43 percent that offer online instruction courses (Bertot et al. 2008).

You will find that there are many examples of uses of the Web by school and public libraries to assist their patrons in learning a wide range of subjects. Topics covered include those that are typical of academic library instruction plus different approaches to engage students and lifelong learners by zeroing in on specific target audiences, such as children, teens, and seniors.

Special libraries cover a wide variety of potential students and educational needs, including special academic (e.g., business, law, medical), art, museum, corporate, government agencies, newspapers, and film, to name just a few. The educational needs of the users of special libraries are wide ranging also. But the importance of offering library instruction spans all types of special libraries. In an era of limited financial resources, many special libraries have been forced to justify their budget and their existence. A good library education program can keep a special library visible and valuable (Haverkamp and Coffey 1999). Many special libraries have patrons who are geographically dispersed and are busy adults who need to become proficient with computer technologies and the Internet to perform their jobs in today’s global economy. Web-based instruction can be one cost-effective avenue to reach each targeted audience. Driscoll (2002) cites tactical advantages of the use of web-based training:

- reduced travel and related costs
- learning that can occur any time and any place
- the provision of just-in-time learning
- the leveraging of existing infrastructure
Library Instruction on the Web

- platform-independent delivery
- easy updates

TYPES AND EXAMPLES OF WEB-BASED LIBRARY INSTRUCTION

What kind of library instruction can you deliver via the Web? An examination of current web technologies coupled with the range of library instruction content shows that you are limited only by your imagination. This section introduces some of the major topics and examples of their use.

The Changing Information Landscape

In recent years, attention has focused on the change in the information landscape. Ten years ago, information was primarily prepackaged in a book, a newscast, or a magazine; today it is acquired in myriad ways that learners often completely control. As Siemens and Tittenberger (2009) note, “Our learning and information acquisition is a mashup.” Helping learners understand this new paradigm and the changes in the information cycle has become a basic goal of library instruction.

The creation of information is now largely in the hands of individuals. User-generated content has introduced new facets to the origin of information:

The packaging of information has been altered: Instead of being prepackaged, information can be packaged according to the needs and interests of each individual learner, which requires a new skill set of the student.

Validation of information: No longer can you assume that only experts create reliable information. Wikipedia and other resources like it rely on the wisdom of crowds to discuss and validate information.

Dissemination of information: Although peer review and critical discussion are still prominent parts of the dissemination of scholarly information, changes are under way in the process to disseminate information at an accelerated rate. Ideas such as postpublication review and new models of scholarship are areas for instruction.

Sharing and publication of information: This portion of the information cycle is one that libraries typically address in their instruction.

General Research or Reference Skills

One common type of web-based library tutorial deals with how to undertake research in general. Although at first it might appear that this type of instruction will not meet the criteria of having a course-based focus, it can be integrated into many different disciplines as a supplement (or learning object) because the research process follows a similar path in many subject areas. Furthermore, as mentioned earlier, web-based tutorials can be the primary method of instruction for distance-education students who will not have an opportunity to receive face-to-face course instruction. Typical topics covered in this type of tutorial include planning research, identifying and refining a topic, using available research tools (e.g., online catalog, periodical indexes), evaluating information, citing resources, and differentiating among types of resources.

Online Catalog Skills

A library’s online catalog is its main tool for finding materials in its collection. A tutorial that instructs library users in searching that specific system can be helpful to all concerned. Online systems today are sophisticated enough to permit complex search strategies. If a tutorial is developed to teach users how to search in one system, users can then transfer the strategies learned to other online systems. Concepts that an online catalog tutorial can convey include searching by keyword versus subject, the meaning of call numbers and how they are structured, when to try different access points to find materials (e.g., author, title, subject, keyword), and how to search different fields simultaneously with Boolean logic. Students can learn about different types of information available in the library and how to interpret and refine the results they retrieve from the catalog.

Database- or Software-Specific Search Skills

A tutorial on database- or software-specific search skills teaches users to use specific databases or to master particular search-software interfaces. Because there are so many database interfaces, it is necessary to help users learn how to navigate them. Some search software, such as EBSCOhost or ProQuest, provides one interface to search multiple databases. Instruction designed to teach how to search specific interfaces can be integrated into subject-specific and course-related instruction by focusing on an appropriate database for a particular field. Mastery of the search software can translate into knowledge of how to use the program in another discipline.
Discipline- or Course-Specific Research Skills

Instruction in discipline- or course-specific research skills zeros in on teaching students to conduct research in a certain discipline. A humanities student approaches a research project in a much different manner than a physics student does. Usually a discipline-specific tutorial supports a particular course, often a survey course with multiple sections. This type of tutorial is quite focused and provides students with in-depth instruction on how to do research in a particular field, as well as information about appropriate sources and research processes unique to that discipline.

Assignment-Specific Instruction

Instruction can also be developed to guide a student through a specific assignment for a course. This is a perfect opportunity for a librarian to collaborate with a professor to create an interactive web research project.

Internet Instruction

In many libraries, teaching Internet-related topics has become a standard part of the instruction mission. This type of instruction can range from teaching the mechanics of navigating the Internet to how to use the Web for research. Different libraries have included a vast assortment of instruction topics about the Internet in their lessons. The following potential Internet topics will give you an idea of the possibilities.

Introduction to the Internet

Even though the Internet may seem ubiquitous to many people, there are still many others who seek instruction on how to access and use it. For instance, 56 percent of seniors between the ages of sixty-four and seventy-two and 31 percent of those older than seventy-two are online (Pew Internet 2009), and many turn to their public libraries to learn about the basics of the Internet.

History of the Internet

Tutorials that cover the history of the Internet and the World Wide Web can help students understand that it is not a single entity but rather a non-centralized global network of networks.

Internet Skills

There are many different skills that new Internet users need to learn to function efficiently on the Web.

Web Browser Navigation. As with any software application, people who are new to the Internet often find it helpful to receive instruction on how to use web browsers. The interfaces in the various available browsers are not always user friendly. Highlighting the available features and functions will assist new users.

Communication on the Internet. One of the top uses of the Internet for many people is to communicate with others. There are asynchronous and synchronous methods to engage in online communication, including e-mail, discussion groups, blogging, microblogging, instant messaging and chat, and texting.

Netiquette. Unique sets of social conventions surround appropriate behavior on the Internet. These come into play in most online environments and may be completely different depending on individual settings. For instance, proper English may be appropriate in a blog posting, whereas texting encourages abbreviated language and slang because of limitations on message length. Although new users may think such things are common sense once they are introduced, they will appreciate a vehicle for learning them before they make an online faux pas!

Research on the Web

Use of Web Search Tools. New search engines, directories, and indexes are introduced regularly. There will continue to be a need to instruct people to use them as they are introduced.

Web Search Strategies. Without a solid understanding of the most efficient techniques to conduct searches, the amount of information a web search returns easily overwhelms users.

Evaluation of Web Resources. Because anyone can publish to the Web, it has never been so important to teach students the criteria required to assess the quality of information retrieved from the Internet. Wikipedia, a collaboratively written encyclopedia, is one of the popular choices to use in a discussion of evaluation.

WebQuests. The term WebQuests, coined in 1995, describes an “inquiry-oriented lesson format in which most or all the information that learners work with comes from the web” (www.webquest.org). The lesson’s objective is to promote learning outcomes, which are achieved through the reading, analysis, and synthesis of Web-based information (Dodge, 2007).
WebQuests have become a popular tool for educators who want to use the Internet while teaching their students to use critical-thinking skills. The technology of a WebQuest is straightforward, but it is more than a series of pages with hyperlinks. An effective WebQuest

- is centered on a doable and interesting task that is ideally a scaled-down version of things that adults do as citizens or workers
- requires higher-level thinking, not simply summarizing, including synthesis, analysis, problem solving, creativity, and judgment
- makes good use of the Web

*Deep Web.* The deep Web (also called the invisible Web or hidden Web) is that content which is not easily discoverable through standard search engines. It includes dynamically generated content (i.e., content that is contained in databases and retrieved through queries), as well as unlinked, password-protected, contextual, and scripted content.

**Making and Publishing Web Pages and Sites**

There are a wide variety of topics included under making and publishing web pages and websites: the creation of basic web pages, the use of specific web editors, Cascading Style Sheets language, the creation of accessible web pages, the control of access to pages and sites, the creation of web graphics, design and layout principles, writing for the Web, and more. In fact, online instruction could be created for almost every subject you will encounter in this book!

**File Sharing**

Electronic files (most often audio and video files) are made available for download via the Internet. They are most often stored on individual users’ computers and shared using a peer-to-peer model. The sharing of such files has been a major issue in campuses across the nation over the past several years. However, file sharing is not restricted to academia, as evidenced by Pew’s report that 15 percent of adult Internet users participate in file sharing (Pew Internet and American Life Project 2009). The difficulty arises when downloaded material is copyrighted and is therefore illegal to share without permission. Educating people about the legal and moral aspects of file sharing has become, by necessity, an important topic.

**Internet and Digital Safety**

Internet safety is an important topic, especially with regard to children using the Web. Topics that have become important as preteens’ Internet
access expands include such serious issues as cyberbullying, identity protection, and sexual predators. Digital safety includes protection from such things as identity theft by ploys such as phishing, spam, and spyware.

**Phishing.** Phishing describes hackers creating a replica of an existing legitimate web page (often a commercial site such as a bank) to fool a user into submitting personal, financial, or password data. It is a scam that has become prevalent and that users need to be educated about.

**Spam.** Spam is unwanted, unsolicited, junk e-mail addressed to a large number of recipients. It has become so prevalent in the past few years that it has become more than just an annoyance. Learning how to minimize one’s chances for attracting spam, how to filter it, and what to do with it when it is received are necessary skills in today’s electronic world.

**Spyware.** Spyware is a technology that surreptitiously collects information about a person without his or her knowledge. A software program is installed on the user’s computer, often when the user is downloading another program. Also known as adware, spyware gathers information and shares it with third parties, often advertisers who use the information to target their marketing. Besides raising serious concerns over user privacy, this software can affect the performance of the computer on which it is installed, sometimes going as far as to hijack the web browser and slow performance considerably.

**Internet Telephony**
Voice-over-Internet protocol (VoIP) is a technology for transmitting ordinary telephone calls over the Internet. It takes analog audio signals, like the kind you hear when you talk on the phone, and turns them into digital data for transmission over the Internet. Because it bypasses the regular phone system, long distance calls are often free, and costs are restricted to the cost of your network subscription. As this technology has become more widely available, there is increased interest in learning about how it works.

**Web 2.0**
The second-generation read-write web has exploded into popular culture and is a topic of widespread interest. The various social networking technologies and applications that comprise Web 2.0 are timely fodder for instructional opportunities. Topics such as user-generated content, tags, mashups, cloud computing, the long tail, and remix culture are just a few of the newer concepts that you could easily incorporate into instruction.
Social Networking. Web 2.0 is built around the concept of social networking, or building communities of people who have shared interests and activities. There are many directions that have developed in addition to connecting to friends. It is now simple to join online conversations that take place on blogs, to provide recommendations on merchandise such as videos and books, and to share your network for business purposes.

Blog. The blog (from weblog) is a concept that has been around since the mid-1990s. Originally, blogs were personal communication tools operated by individuals (bloggers) who compiled lists of links to sites of interest to them and intermingled this with information and editorials. As the idea caught on, their purpose has expanded to more serious uses including politics, corporate communication with customers, and collaborative space. Over the past five years, educators, including librarians, have discovered the value of blogs. Teaching students about blogs—their history, purpose, and potential—is now a standard component of information literacy instruction (chapter 7 discusses blogs in greater detail).

Wiki. A wiki is a collaborative website comprising the perpetual collective work of many authors. It is similar to a blog in structure and logic. However, it allows anyone to edit, delete, or modify content, including the work of previous authors. The collaborative nature of a wiki has great potential in educational settings and for group projects (chapter 7 discusses wikis in more detail).

User-generated content. A basic tenet of Web 2.0 is user-generated content, which includes all the types of media content that end users produce. Some of the most commonly known types of user-generated content include discussion boards, blogs, customer review sites, social networking sites, digital video, image sharing, podcasting, and wikis. Wikipedia is one of the best-known examples of collaborative user-created content and is ripe for inclusion in instruction on accuracy of sources.

Tags. Tags are user-generated terms assigned to information to describe it. Tagging is the opposite of expert-created descriptions like Library of Congress subject headings. Because tagging is an informal system, education on its history, meaning, and advantages can help users understand its potential and limitations.

Cloud Computing. The term cloud computing is used to describe when virtualized resources are provided as a service by using Internet technologies.
Users don’t need to know or understand the technology infrastructure or location of the “cloud” that supports them. There is no need for local expenditures for hardware (servers) and application. Examples of popular cloud computing services are Google Apps and web-based e-mail services. According to the research firm Gartner (2009) and its report *Hype Cycle for Cloud Computing, 2009*, the move toward cloud computing is predicted to become a transformational change within two to five years.

**RSS.** The acronym RSS originally stood for RDF (Resource Description Framework) Site Summary, which was soon simplified to Rich Site Summary. More commonly known as Really Simple Syndication or web feed, RSS is an XML format for distributing news headlines and new content on the Web. This technology can be set up to help users stay abreast of new information by having it delivered to and constantly updated via a news aggregator, a piece of software freely available on the Web. Tutorials on RSS can be valuable in helping users set up their own feeds or to instruct information providers in setting up an RSS feed for their content.

**Podcasts.** Podcasts have become an effective method for delivering instruction over the Web. A podcast is an audio or video file that users download through web syndication. Because the process of creating podcasts is different from other ways of accessing media over the Internet, teaching students or educators how to create a podcast is a pertinent topic (chapter 6 discusses podcasts in more detail).

**Wi-Fi.** The term *wi-fi* is short for *wireless fidelity* and is used commonly when referring to the IEEE 802.11 wireless networking specification. This is the technology that allows computers and personal digital assistants (PDAs) to share a high-speed Internet connection over a distance of about three hundred feet and to connect to a local network without wires. Many libraries are moving toward incorporating this technology into their buildings because it can be more cost effective than a wired network (especially when retrofitting an existing building) and can provide patrons with both mobility to connect throughout the building and access to the Internet in difficult-to-reach areas. As more people become interested in having a wireless network in their homes, they will seek instruction on how the technology works.

**General Library Orientation**

Most academic libraries hold library orientation tours each semester when new students arrive on campus. Any library can be an intimidating
structure to new patrons. Helping students learn where departments, services, and materials are located in the library is the first step in transforming them into independent information seekers. A virtual library tour can serve the same purpose. It provides patrons with a map they can use to become acquainted with the library building and its services. This can also be beneficial in special and public libraries to help orient patrons.

**Information Literacy Courses**

As the world of information becomes more complex, information literacy instruction has become an increasingly important part of the education process. Many higher education institutions include an information literacy class as a required part of the curriculum, often during a student’s first year. The class may be offered as a separate class for credit or incorporated into a survey course, such as freshman English. These courses allow concepts to be covered in an in-depth manner because they remove the time constraints of a one-shot class. In this type of forum, there are many opportunities to incorporate active learning, collaborative learning, multimedia to present information, and other characteristics of good library instruction. The recognition of the need to educate people to be information literate is not limited to academia by any means. A survey of information literature over a thirty-year period indicates that school librarians and school media specialists have had to address this need to teach information skills from kindergarten through high school. It also found that, although user instruction generally was minimal in public libraries, current demands for distance-education support and from K–12 students have grown and need to be tackled by public librarians (Rader 2002).

A typical approach to online information literacy instruction can be found in the modules developed by the University of Hawaii system libraries in their tutorial “Learning Information Literacy Online” (LILO; www.hawaii.edu/lilo/). Broad topics in the LILO tutorial include the research process, assignments, research strategies, conducting searches, evaluation, and synthesis.

Other researchers are addressing broader views of literacies that are important for today’s students and tomorrow’s citizens (Mitchell and Smith 2009) (for an introduction to some of those expanded models, see chapter 1). Literacies that are prime candidates for instruction include Shapiro and Hughes’ (1996) tool, social-structural, and emerging technology literacies. Other pertinent literacies include current information issues literacy, data management literacy, and document modeling literacy (the inherent structure of a document).
Academic Integrity and Intellectual Property

Although most information literacy courses include information about academic integrity and intellectual property, because those are hot issues in education today, instructional units focusing strictly on this area are common. The two issues permeate all areas of the academic experience, but in many cases, libraries are taking the lead in getting out information to educate students about what is acceptable and unacceptable behavior.

The Internet has made it easy for users to access others’ work and advances in technology have made it easy to manipulate those works. A major facet of academic inquiry is the concept of building on others’ work and then synthesizing the previous knowledge into something new. The ease of this in the electronic world makes it more important than ever to teach the ethics of properly acknowledging prior knowledge. Because many students today are very connected into electronic media, including music, mashups, and remix culture, those areas can offer concrete parallels for the concept of building on others’ work.

The word *mashup* has different meanings. It refers to digital media that comprises pieces drawn from preexisting sources to create a new derivative work. It also refers to music that is created by blending two or more songs, typically by overlaying the vocal track of one song over the music track of a different song. Finally, in web development, *mashup* refers to an application that combines data or functionality from multiple sources to create a new service (for examples, see the ProgrammableWeb Mashup Matrix, at www.programmableweb.com/mashups/). In all cases, however, the resulting product (music or application) has been altered from preexisting creative work.

The term *remix culture* describes a society that encourages the creation of new derivative works by making changes and/or improvements to works held under copyright. Copyright activists look to this type of culture as preferable to a permission culture in which copyright restrictions are pervasive. Proponents believe that a remix culture promotes creativity and the birth of essentially new works. These concepts can be integrated into meaningful instruction on fair use and copyright. They can become springboards for introducing new models of permission such as Creative Commons (creativecommons.org), which allows creators to determine the ranges of protection for use of their works.

Productivity Software Applications

As the need for computing skills has evolved, many libraries—public ones in particular—have become the providers of training for productivity

software applications. Instruction has been developed to teach the use of applications, such as word processing, spreadsheets, web editing, multimedia, graphics creation, and bibliographic management software such as EndNote and Zotero.
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