# **Technology for Success: Computer Concepts**

# **Module 2: The Web**

# **A Guide to this Instructor’s Manual:**

We have designed this Instructor’s Manual to supplement and enhance your teaching experience through classroom activities and a cohesive module summary.

This document is organized chronologically, using the same lesson in **red** that you see in the textbook. Under each lesson you will find (in order): Lecture Notes that summarize the section, Figures and Boxes found in the section, if any, Teacher Tips, Classroom Activities, and Lab Activities. Pay special attention to teaching tips, and activities geared toward quizzing your students, enhancing their critical thinking skills, and encouraging experimentation within the software.

In addition to this Instructor’s Manual, our Instructor’s Resources also contain PowerPoint Presentations, Test Banks, and other supplements to aid in your teaching experience.

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# **Module Objectives**

Students will have mastered the material in Module 2 when they can:

* Explain the role of the web in daily life
* Describe websites and webpages
* Use e-commerce
* Explain how information literacy applies to web searches and research
* Conduct online research

**Lesson 1: The Role of the Web in Daily Life**

LECTURE NOTES

* Define Web Browsing Terms
	+ Internet: a global collection of millions of computers linked together to share information worldwide; used by more than 3.2 billion people
	+ Webpage: an electronic document that can contain text, graphics, sound, video, and links to other webpages
	+ Website: a collection of webpages
	+ Browser: an app designed to display webpages (Google Chrome, Apple Safari, and Microsoft Edge are examples)
	+ Navigation: moving from one webpage to another via the tools in a browser
	+ Home/start page: the webpage that appears when you open a browser
	+ Hyperlinks: words or graphics you can click to display a webpage or other resources on the Internet, such as a file
	+ Uniform resource locator (URL): an address that identifies the location of the page on the Internet.
		- Figure 2-4 shows the parts of a URL
		- Table 2-1 defines each part of a URL
		- When a webpage starts with http://, the browser uses the Hypertext Transfer Protocol (HTTP), the most common way to transfer information around the web, to retrieve the page
	+ Web server: delivers webpages to computers requesting the pages through a browser (“www” in a web address indicates that the server is a web server)
		- The server address in a URL corresponds with an Internet Protocol (IP) address, which identifies every computer on the Internet. An IP address is a unique number that consists of four sets of numbers from 0 to 255 separated by periods, or dots (69.32.132.255, for example).
		- A domain name identifies one or more IP addresses. URLs use the domain name in the server address part of the URL to identify a particular website.
		- Files stored on a web server have a unique pathname
		- Not all URLs include a pathname
	+ A browser displays the URL for the current webpage in its address bar
	+ As one navigates websites, the browser keeps a copy of each page in a cache, so the next time it will load more quickly
	+ The browser also tracks breadcrumbs, the path one follows to display a webpage
	+ The navigation bar in a browser includes buttons such as Back and Forward, which allow one to revisit webpages along the breadcrumb path
* Explain the Purpose of a Top-Level Domain
	+ In a web address, the three-letter extension after the period indicates a top-level domain (TLD)
	+ The TLD identifies the type of organization associated with the domain
	+ Table 2-2 identifies the popular TLDs in the United States
* Describe Internet Standards
	+ Internet Engineering Task Force (IETF): sets standards that allow devices, services, and applications to work together across the Internet (such as rules for routing data, securing websites, and developing guidelines for responsible Internet use)
	+ World Wide Web Consortium (W3C), hundreds of organizations and experts that work together to write web standards

FIGURES and TABLES:

Figure 2-1: The web in daily life

Figure 2-2: Webpage

Figure 2-3: Comparing websites

Figure 2-4: Parts of a URL

Table 2-1: URL parts

Figure 2-5: Navigating the web with a browser

Table 2-2: Popular TLDs in the United States

TEACHER TIP

Conduct a demonstration of Google Chrome, Apple Safari, and Internet Edge. Discuss the commonalities between them and some of the differences.

CLASSROOM ACTIVITIES

1. Classroom activity 1: TLDs and Accuracy. Find examples of some of the popular TLDs in the United States and discuss the differences that can occur based upon who runs the website. Do you notice a difference with some types of TLDs in terms of credibility, bias, or reliability? Which TLDs do you trust the most, which do you eye with skepticism (if any), and why?

2. Classroom activity 2: Discuss a business website. As a class, decide what type of business you are running, and discuss what type of website would be most beneficial to enhancing your business. What are the goals of designing the website? What attributes would you want your website to have, and how would they help with productivity?

3. Quick Quiz: What is the purpose of a domain address, and how does it differ from an IP address?

Answer: A domain address consists of words used to identify the web address to the layperson, whereas the IP address is a series of numbers. The domain address seeks to translate the IP address into a language that can more readily be understood by the average computer user.

4. Critical Thinking: Internet Standards. Discuss who should set standards about what type of content should be available on the Internet, and what the standards of conduct should be (if any)? What are some of the challenges with enforcing Internet standards? How, if at all, can these be overcome?

**Lesson 2: Describe Websites and Webpages**

LECTURE NOTES

* Identify the types of websites
	+ Most websites fall into one of the following categories:
		- banking and finance
		- blogs: informal websites with time-stamped articles or posts, in a diary or journal format.
		- Bookmarking
		- Business
		- careers and employment
		- content aggregation: organizes and then distributes content (News 360 and Flipboard, for example)
		- e-commerce
		- educational: offers formal and informal teaching and learning
		- entertainment: view or discuss activities ranging for sports to videos
		- government or organization
		- health and fitness
		- information and research
		- mapping
		- media sharing: manage photos, video, and music, and share them with other site members (YouTube or Flickr, for example)
		- news, weather, sports, and other mass media
		- online social networks: encourage members to share interests, ideas, stories, photos, music, and videos online with registered users. Allows users to communicate through text, voice, and video chat, and play games with other members (Facebook, Twitter, WhatsApp, Instagram, Pinterest, and Tumblr are examples). Figure 2-8 provides an example.
		- portals: combines pages from many sources and provides access to those pages, most are customized to meet your needs and interests
		- retail and auctions
		- science
		- search sites: find websites, webpages, images, videos, news, maps and other information related to a specific topic (Google, for example)
			* Search sites use search engines, software designed to find webpages, based on search criteria.
		- travel and tourism
		- website creation and management
		- web apps and software as a service (SaaS)
		- wikis and collaboration: a collaborative website where you and your colleagues can modify and publish content on a webpage; useful for group projects
* Explain the pros and cons of web apps
	+ Web apps: applications that run entirely in a browser, resides on a server on the Internet instead of on a computer or mobile device. Some apps can run as traditional installed apps or as web apps (Dropbox, Skype, Microsoft Office, for example) (Figure 2-9: Web apps running in a browser).
	+ Table 2-3 shows the pros and cons of web apps
		- Pros
			* Access web apps from any device with a browser and Internet connection.
			* Collaborate with others no matter their location.
			* Store your work on the app’s website so you can access it anytime and anywhere.
			* Save storage space on your device.
			* Access the latest version of the app without installing updates.
		- Cons
			* You must be online to use web apps.
			* Your files are more vulnerable to security and privacy violations.
			* If the web app provider has technical problems, you might not be able to access your work.
			* If the web app provider goes out of business, you can lose your files.
			* Web apps often offer fewer features and may run more slowly than installed apps.
* Identify the major components of a webpage (Figure 2-10)
	+ Header: located at the top of the webpage, usually includes a logo to identify the organization sponsoring the webpage and a title to identify the webpage’s purpose.
	+ Navigation bar: a bar or menu which lists links to other major parts of the website
	+ Body: the main content area—can provide text, images, audio, and video
	+ Sidebar: a column on the side of the webpage which provides supplemental material, such as social networking feeds, ads, and links
	+ Footer: located at the bottom, contains links to other parts of the website and information about the webpage, such as when it was last updated
* Identify secure and insecure websites
	+ Secure websites (Figure 2-11)
		- Use encryption (a security method that scrambles or codes data as it is transmitted over a network, so it is not readable until it is decrypted) to safeguard transmitted information
		- An encrypted website displays “https” instead of “http” in the URL, which stands for Hypertext Transfer Protocol Secure (HTTPS)
		- Use digital certificates to vouch for the authenticity of the website
		- Lock icon
		- Requires sign-in with username/password before entering sensitive information
	+ Insecure websites
		- Does not include indicators such as a lock icon
		- URL starts with “http,” indicating an unprotected protocol for transmitting information
		- In Chrome, the address bar identifies websites as “not secure”

FIGURES and TABLES:

Figure 2-6: Tasks you can accomplish on websites

Figure 2-7: Educational website

Figure 2-5: Navigating the web with a browser

Figure 2-8: Online social networking websites

Figure 2-9: Web apps running in a browser

Table 2-3: Pros and cons of web apps

Figure 2-10: Parts of a webpage

Figure 2-11: Secure website

TEACHER TIP

Pull up a secure website and an insecure website and discuss the differences in features.

CLASSROOM ACTIVITIES

1. Classroom activity 1: Compile a list of all the activities that can be completed online and find examples of these websites. Some suggestions include: play games; access news, weather, and sports information; download or read books; participate in online training; attend classes; download and share media; shop for goods and services; conduct research; pay bills; communicate with people conduct banking and finance activities.

2. Classroom activity 2: Passwords, passwords, passwords. Describe the different methods used by websites to employ security for user data. What are the possible ramifications to the company if a data breach occurs? Consider some popular examples of data breaches and the negative publicity/loss of revenue/customers that may have resulted from it. Discuss the need to use different usernames/passwords for website logins. How many in the class use the same password for multiple websites? Discuss the use of a password manager and two-factor authentication.

3. Quick Quiz: Match the major components of a website to their definitions.

1. Header a. Provides supplemental material, such as ads and links
2. Navigation bar b. The main content area
3. Body c. Lists links to other parts of the website
4. Sidebar d. Includes the logo and the title
5. Footer e. Lists information such as when the webpage was last updated

Answer: 1-d, 2-c, 3-b, 4-a, 5-e

4. Critical Thinking: How does our reliance on the Internet impact interpersonal communications? Think about the activities that you now conduct online and which you used to conduct in person or via phone. Does our reliance on technology close us off socially from one another, or does it lead to closer relationships (keeping track of friends via social media that we might have otherwise lost touch with, for example)?

**Lesson 3: Use E-Commerce**

LECTURE NOTES

* Explain the role of e-commerce in daily life
	+ E-commerce: business transactions on an electronic network such as the Internet
	+ Three types of e-commerce websites (Table 2-4)
		- Business-to-consumer (B2C): involves the sale of goods and services to the general public
		- Consumer-to-consumer (C2C): occurs when one consumer sells directly to another
		- Business-to-business (B2B): consists of businesses providing goods and services to other businesses
	+ Table 2-5 outlines the pros and cons of e-commerce for consumers
		- Pros
			* Variety: you can choose goods from any vendor in the world
			* Convenience: you can shop no matter your location, time of day, conditions
			* Budget: by searching and comparing prices online, you can find products that meet your budget
		- Cons
			* Security: credit card information and personal data can be intercepted at insecure websites
			* Fraud: some websites are designed to look legitimate while accessing your account information
			* Indirect experience: you cannot experience a product directly to verify color, quality, size, or texture
* Use e-commerce in business transactions (Figure 2-12 shows an example)
	+ Transferring goods, services, or information between businesses
	+ Pricing can vary based upon the level of service provided, negotiated terms, and other factors
	+ A team of people often review and make a purchasing decision
* Use e-commerce in personal transactions
	+ B2C/E-Retail (Figure 2-13)
	+ Electronic storefront: contains product descriptions, images, and a shopping cart to collect items you want to purchase. When you’re ready to complete the sale, you enter personal data and the method of payment, which should be through a secure Internet connection.
	+ Tracks your selected items using cookies: small text files generated by a web server that act like a storage bin for the items you place in your shopping cart. Cookies store shopping cart item numbers, saved preferences, and other information.
	+ Make secure e-commerce payments
		- 3D Secure: a standard protocol for securing credit card transactions over the Internet
		- Transport Layer Security (TLS): encrypts data and helps protects consumers from fraud/identity theft
	+ Online payment services (PayPal, Square Cash, Venmo, and Zelle)
* Explain how to find e-commerce deals
	+ Comparison shopping sites (BizRate, NexTag, and PriceGrabber are examples) let the consumer compare prices from multiple vendors
	+ Using digital deals (Figure 2-14)
		- Gift certificates
		- Gift cards
		- Coupons (RetailMeNot and Honey)
		- Deal-of-the day websites (Groupon and NewEgg)

FIGURES and TABLES:

Table 2-4: Three types of e-commerce websites

Table 2-5: E-commerce pros and cons for consumers

Figure 2-12: B2B website

Figure 2-13: B2C website

Figure 2-14: Digital deals and coupons

TEACHER TIP

Explore some online consumer comparison and online deal websites with students.

CLASSROOM ACTIVITIES

1. Investigate the following payment types and discuss their attributes. What are the pros and cons of each? A) PayPal, B) Square Cash, C) Apple-Pay, D) Google Wallet.

2. Classroom activity: Compare and contrast the three types of e-commerce websites. What attributes does each need to be successful? Divide the class into three groups, and have each group create a plan of what their website would look like. Present your plan to the other groups.

3. Quick Quiz: Retail websites often track the consumer’s preferences by using \_\_\_\_\_\_\_.

Answer: cookies

4. Critical Thinking: Discuss the impact that online retail has had on storefront businesses. Is it a positive or negative to our economy? Think about the last time you went to a small privately owned bookstore, toy store, etc. Are we discouraging small business owners with our emphasis on the retail economy?

**Lesson 4: Apply Information Literacy to Web Searches**

LECTURE NOTES

* Define information literacy
	+ How one finds, evaluates, uses, and communicates online information
	+ Allows one to:
		- Navigate many sources of information, including the Internet, online libraries, and popular media sites.
		- Select the right tool for finding the information you need.
		- Recognize that not all information is created equal.
		- Evaluate whether the information is misleading, biased, or out of date.
		- Manage information to become a knowledgeable decision maker.
* Explain how search engines work (Figure 2-15)
	+ Compiles a database of information about webpages
	+ Uses software programs called spiders or crawlers to build an index of terms and their locations
	+ When one enters a query, the search engine refers to its index and lists pages based on how closely they answer the query
	+ Ranking depends on how often and where a search term appears on the webpage, how long the webpage has been published, and the number of other webpages that link to it
* Use search tools and strategies
	+ Find online information based on criteria you specify or selections you make
	+ Search engines
	+ Search boxes on webpages
	+ Web directory or subject directory: an online guide to subjects or websites, usually arranged in alphabetic order (Figure 2-16).
		- A human editor creates the index for a web directory, selecting categories that make sense for the information the web directory provides. The editor usually reviews sites that are submitted to the directory and can exclude those that do not seem credible or reliable. For this reason, a web directory is often a better choice than a search engine if you are conducting research online.
	+ Specialized search tools concentrate on specific resources, such as scholarly journals or the United States Congress (examples: Directory of Open Access Journals, Google Books)
	+ Use a Search Strategy (Figure 2-17)
		- State what kind of information you are seeking, as specifically as possible
		- Phrase the search term as a question
		- Identify the keywords or phrases that could answer the question
		- Select an appropriate search tool
		- Perform the search, and refine the web search to narrow or broaden the results
		- Use a word stem to help broaden results
* Refine web searches
	+ Learning from the Search Engine Results Page (SERP) (Figure 2-18)
		- Subject filters
		- Time filters
		- Questions other users often ask about the same subject
		- Search terms related to the original term
		- Knowledge graph pulled from online sources
	+ Search Engine Practices
		- Lists the most relevant results, or hits, on the first page.
		- Results labeled as an “Ad” or “Sponsored link” are from advertisers
		- Each type of filter offers related features
		- Google displays a “People also search for” list below a link you visited
	+ You can also refine a web search by using search operators, also called Boolean operators, which are characters, words, or symbols that focus the search. Table 2-6 lists common search operators.
		- Advanced search operators: special terms followed by a colon ( : )
		- To broaden a search, you can use a word stem, which is the base of a word.

FIGURES and TABLES:

Figure 2-15: Search tools, techniques, and strategies

Figure 2-16: Library subject directory

Figure 2-17: Search strategy

Figure 2-18: Learning from the SERP

Table 2-6: Common search operators

Table 2-7: Examples of web searches

TEACHER TIP

Compare and contrast the search attributes of various search engines, such as Google, Bing, DuckDuckGo, or Yahoo!

CLASSROOM ACTIVITIES

1. Assign a project: Assign a subject for the class to research, and then discuss the search strategy. Use the steps from Figure 2-17 as a model, and use your specific topic to illustrate how each of these steps would lead you to information.

2. Classroom activity: Choose a Congressional law to research, and then decide what specialized research tools you would use to find information. Compare the information you find from these specialized search tools to information found on a more general search engine like Google or Bing. Discuss your results.

3. Quick Quiz: \_\_\_\_\_\_\_ best describe what you want to find and produce a list of results that include the words or phrase.

Answer: Keywords

4. Critical Thinking: What is information literacy, and how is it measured? What are some ways that we can become more informationally literate?

**Lesson 5: Conduct Online Research**

LECTURE NOTES

* Use specialty search engines
	+ Let one search for information sources that general search engines do not always access (Table 2-8: Additional search tools).
* Evaluate online information
	+ The CARS Checklist
		- Credibility: identify the author and check credentials
			* Identify the author of the webpage and check their credentials.
			* Find biographical information to learn whether the author has a degree in a field related to the topic.
			* Use Google or LinkedIn to search for the author’s name and see whether the author is an expert on the subject.
		- Accuracy: verify facts and claims, check for bias
			* Verify its facts and claims. Consult an expert or use fact-checking sites such as snopes.com and factcheck.org to find professionally researched information.
			* Evaluate the information source. Be wary of web addresses that contain slight modifications of legitimate sites, use unusual domain names, or have long URLs.
			* Find out more about an organization that has no history, physical location, or staff.
			* Check to see if the source has a bias and evaluate the information with the bias in mind.
			* Check the webpage footer for the date the information was published or updated. For many topics, especially technology, you need current information.
		- Reasonableness: examine whether the claims are fair and sensible
			* Identify the purpose of the webpage. Is the page designed to provide facts and other information, sell a product or service, or express opinions?
			* Evaluate whether the webpage offers more than one point of view.
			* Emotional, persuasive, or biased language is often a sign that the author is not being fair or moderate. Even opinions should be expressed in a moderate tone.
			* Look for a conflict of interest. For example, if the page reviews a certain brand of smartphone and the author sells those types of phones, he or she has a conflict of interest.
		- Support: look for reputable sources and authorities
			* Look for links or citations to reputable sources or authorities. Test the links to make sure they work.
			* Check other webpages and print material on the topic to see if they cite the same sources.
			* Look for quotations from experts.
			* For photos or other reproduced content, a credit line should appear somewhere on the page that states the source and any necessary copyright information.
* Gather content from online sources
	+ Follow Ethical Guidelines
		- Copying photos might violate intellectual property rights
		- A copyright gives authors and artists the legal right to sell, publish, or distribute an original work
		- Some online resources are protected by digital rights management (DRM), which are techniques such as authentication, copy protection, or encryption that limit access to propriety materials.
		- Some material is in the public domain (Figure 2-19) and can be used without permission
			* Material for which the copyright has expired
			* Work that has been explicitly released to the public domain by its owner
		- The fair use doctrine allows one to use a sentence or paragraph of text without permission with a citation to the original source
		- Creative Commons (CC): a nonprofit organization that helps content creators keep the copyright to their materials while allowing others to use, copy, or distribute their work
			* Creators choose the type of license that explains how others can use your work
			* Figure 2-20
* Apply information literacy standards
	+ A citation is a formal reference to a source
	+ Each type of information source uses a different citation style (MLA, APA, Chicago)
	+ Bibliography: an alphabetical collection of citations (Figure 2-21)
	+ Failure to cite sources, even if some of the words are changed or paraphrased, is plagiarism

FIGURES and TABLES:

Table 2-8: Additional search tools

Figure 2-19: Copyright information on the U.S. Department of Agriculture site

Figure 2-20: Creative Commons website

Figure 2-21: Citing sources in Microsoft Word

TEACHER TIP

Demonstrate the proper way to cite some common sources in MLA and APA format.

CLASSROOM ACTIVITIES

1. Classroom activity: The evolution of media. Discuss how the ability to copy and distribute media has changed the music and entertainment industry. How have these industries attempted to adapt with the changes in technology, and have they been successful? Take a poll of the following: How many people have cable television, how many in the classroom stream media services like Netflix, how many people buy albums in their traditional form? How many in the classroom pay for a music streaming service? Do you believe that torrenting media (tv shows and movies) should be illegal or legal?

2. Classroom activity: How can we best determine what information, if any, on the Internet is valid? What does “fake news” mean to you? Discuss how a rumor can become “fact” much easier on the Internet by playing a game of “telephone” with the class and comparing it to social media platforms.

3. Quick Quiz: \_\_\_\_\_\_\_ is a nonprofit organization that helps content creators keep the copyright to their materials while allowing others to use, copy, or distribute their work

Answer: Creative Common

4. Critical Thinking: If you created a song, photograph, writing, or movie, what steps would you take (if any) to protect its dissemination? Would you be willing to make it public domain, and why or why not? Would your answer depend upon the type of media created?

**End of Module Material**

* + - **Module Summary** materials reinforce module content.
		- **Key Terms** present the terms from the text to help students prepare for tests and quizzes. Students should know each Primary Term (shown in bold-black characters in the module) and be familiar with each Secondary Term (shown in italic characters in the module).
		- **Review Questions** provide multiple-choice, true/false, matching, and consider these exercises to reinforce understanding of the topics presented in the module.
		- **Discussion Questions** call on students to relate concepts to their own lives, both personally and professionally, as well as provide collaboration opportunity.
		- **Critical Thinking Activities** provide opportunities for creative solutions to the thought-provoking activities presented in each module. They are constructed for class discussion, presentation, and independent research, and designed for a team environment.

# **Glossary of KEY Terms**

* Key Terms included here.

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