SHELLY CASHMAN SERIES®

WEB DESIGN

INTRODUCTORY

Fifth Edition

CAMPBELL

SHELLY CASHMAN SERIES®

© Tom Kates/Cengage Learning

WEB DESIGN

INTRODUCTORY

Fifth Edition

Jennifer T. Campbell

CENGAGE Learning®

Australia • Brazil • Japan • Korea • Mexico • Singapore • Spain • United Kingdom • United States

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s). Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

This is an electronic version of the print textbook. Due to electronic rights restrictions, some third party content may be suppressed. Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. The publisher reserves the right to remove content from this title at any time if subsequent rights restrictions require it. For valuable information on pricing, previous editions, changes to current editions, and alternate formats, please visit www.cengage.com/highered to search by ISBN#, author, title, or keyword for materials in your areas of interest.

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

Web Design: Introductory, Fifth Edition
Jennifer T. Campbell

Senior Product Manager: Jim Gish

Content Developer: Jon Farnham

Associate Content Developer: Crystal Parenteau

Product Assistant: Gillian Daniels

Development Editor: Amanda Brodkin

Director of Production: Patty Stephan

Content Project Manager: Jennifer Feltri-George

Manufacturing Planner: Julio Esperas

Market Development Manager: Kristie Clark

Market Development Manager: Gretchen Swann

QA Manuscript Reviewers: Jeffrey Schwartz, John Freitas, Danielle Shaw

Composition: PreMediaGlobal

Art Director: GEX Publishing Services

Cover Design: Lisa Kuhn, Curio Press, LLC

Cover Photo: © Tom Kates/Cengage Learning

© 2015 Cengage Learning

WCN: 02-200-203

ALL RIGHTS RESERVED. No part of this work covered by the copyright herein may be reproduced, transmitted, stored or used in any form or by any means graphic, electronic, or mechanical, including but not limited to photocopying, recording, scanning, digitizing, taping, Web distribution, information networks, or information storage and retrieval systems, except as permitted under Section 107 or 108 of the 1976 United States Copyright Act, without the prior written permission of the publisher.

For product information and technology assistance, contact us at
Cengage Learning Customer & Sales Support, 1-800-354-9706

For permission to use material from this text or product, submit all requests online at **cengage.com/permissions**
Further permissions questions can be emailed to
permissionrequest@cengage.com

Library of Congress Control Number: 2014935851

ISBN-13: 978-1-285-17062-6
ISBN-10: 1-285-17062-8

Cengage Learning
20 Channel Center Street
Boston, MA 02210
USA

Cengage Learning is a leading provider of customized learning solutions with office locations around the globe, including Singapore, the United Kingdom, Australia, Mexico, Brazil, and Japan. Locate your local office at:
international.cengage.com/region

Cengage Learning products are represented in Canada by Nelson Education, Ltd.

To learn more about Cengage Learning, visit **www.cengage.com**

Purchase any of our products at your local college bookstore or at our preferred online store at **www.cengagebrain.com**

Printed in the United States of America
1 2 3 4 5 6 7 18 17 16 15 14

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s). Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

WEB DESIGN

Contents

Chapter 1

The Environment and the Tools 1

Introduction 1
The Internet and the World Wide Web 2
- World Wide Web 2
- Influence on Society 4

Ways to Access the Internet and the Web 10
- Cable Internet Access 10
- Fixed and Mobile Wireless Access 11
- Telephone Line Access 11
- Internet Service Providers 13
- Web Browsers 13

Types of Websites 16
- Personal Websites 16
- Organizational and Topical Websites 17
- Commercial Websites 18

Web Design Tools 23
- Markup Languages 24
- Cascading Style Sheets 25
- Scripting Languages 25
- Text and HTML Editors 26
- WYSIWYG Editors 26
- Web Templates and Content Management Systems 28

Web Design Roles 29
- Creative Roles 29
- Technical Roles 30
- Oversight Roles 30
- Other Web Roles 30

Chapter Review 31
Terms to Know 32
Test Your Knowledge 33
Learn It Online 35
Trends 35
At Issue 35
Hands On 36
Team Approach 37
Case Study 38

Chapter 2

Web Publishing Fundamentals 39

Introduction 39
Advantages of Web Publishing 40
- The Currency Advantage 40
- The Connectivity Advantage 41
- The Interactivity Advantage 42
- The Cost Advantage 45
- The Delivery Advantage 45

Basic Web Design Principles 46
- Balance and Proximity 46
- Contrast and Focus 48
- Unity and Visual Identity 49

Writing for the Web 50
- Accuracy and Currency 51
- Scannability 51
- Organization 52

Color as Web Design Tool 53
- The Color Wheel 53
- The RGB Color System 54
- Target Audience Expectations 55

Web Publishing Issues 56
- Technical Issues 56
- Legal and Privacy Issues 59
- Accessibility and Usability Issues 62

Chapter Review 63
Terms to Know 64
Test Your Knowledge 64
Learn It Online 65
Trends 65
At Issue 66
Hands On 66
Team Approach 67
Case Study 67

Chapter 3

Planning a Successful Website: Part 1 69

Introduction 69
The Website Development Planning Process 70
Step 1: Define the Website's Purpose and Audience 71
- Website Goals 71
- Website Objectives 71
- Target Audience Profile 72
- Target Audience Wants, Needs, and Expectations 73
- Website Purpose Statement 74

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

Step 2: Determine the Website's General Content 76
Home, Underlying, and Landing Pages 76
Value-Added Content 79
Organizing Website Files 87
Step 3: Select the Website's Structure 87
Linear/Tutorial Structure 89
Webbed Structure 89
Hierarchical Structure 90
Chapter Review 91
Terms to Know 91
Test Your Knowledge 92
Learn It Online 93
Trends 93
At Issue 94
Hands On 95
Team Approach 95
Case Study 96

Chapter 4

Planning a Successful Website: Part 2 97

Introduction 97
Page Length, Content Placement, and Usability 98
Step 4: Specify the Website's Navigation System 100
User-Based and User-Controlled Navigation 100
Link Types 101
Step 5: Design the Look and Feel of the Website 109
Visual Consistency 109
Color and Visual Contrast 110
CSS and Formatting 113
Page Layout 114
Step 6: Test, Publish, and Maintain the Website 118
Site Plan Checklist 120
Step 1: Identify the Website's Purpose and Target Audience 120
Step 2: Determine the Website's General Content 120
Step 3: Select the Website's Structure 120
Step 4: Specify the Website's Navigation System 120
Step 5: Design the Look and Feel of the Website 121
Step 6: Test, Publish, and Maintain the Website 121
Chapter Review 121
Terms to Know 121
Test Your Knowledge 122
Learn It Online 123
Trends 123
At Issue 124
Hands On 124
Team Approach 125
Case Study 125

Chapter 5

Typography and Images 127

Introduction 127
Webpage Typography Issues 128
Font Sizes and Styles 128
Font Selection and Web Design 128
Image Text 132
Webpage Images 133
Digital Cameras 134
Screen Capture and Illustration Software and Apps 135
Image File Formats 137
Graphics Interchange Format (GIF) 139
JPEG File Interchange Format (JFIF) 139
Portable Network Graphics (PNG) Format 140
Web-Ready Images 140
Refining Images 141
Optimizing Images for Size and Quality 142
Chapter Review 144
Terms to Know 145
Test Your Knowledge 145
Learn It Online 147
Trends 147
At Issue 147
Hands On 148
Team Approach 148
Case Study 149

Chapter 6

Multimedia and Interactivity Elements 151

Introduction 151
Multimedia Issues 152
Animation 153
Animated GIFs 154
Rich Interactive Applications 156
Avatars 157
Gadgets 159
Audio and Video Elements 160
Audio Elements 160
Video Elements 162

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

Interactive Elements 164
Web-Based Form Guidelines 165
JavaScript, Applets, and Servlets 166
Blogs 166
Comments 167
Live Chat 168
Chapter Review 169
Terms to Know 170
Test Your Knowledge 170
Learn It Online 171
Trends 171
At Issue 172
Hands On 172
Team Approach 173
Case Study 173

Chapter 7

Promoting and Maintaining a Website 175

Introduction 175
Website Testing 176
Self-Testing 176
Target Audience Testing 177
Website Publishing 178
Server Space 178
Uploading Website Folders and Files 180
Retesting Published Pages 182
Website Promotion 183
Online Promotional Techniques 183
Traditional Promotional Techniques 192
Website Maintenance and Evaluation 192
Ongoing Maintenance, Updating, and Retesting 192
Evaluating Website Performance 193
Chapter Review 195
Terms to Know 196
Test Your Knowledge 196
Learn It Online 197
Trends 198
At Issue 198
Hands On 199
Team Approach 199
Case Study 200

Appendix A

HTML 5

Introduction APP 1
HTML Syntax APP 1
HTML Tools APP 2
HTML 5 APP 2
HTML 5 Tags and Attributes APP 3

Appendix B

Cascading Style Sheets (CSS)

Introduction APP 13
CSS Benefits APP 13
Style Rule Syntax, Properties, and Values APP 13
Inline Styles, Internal Style Sheets, and External Style Sheets APP 15
Style Sheet Conflicts APP 16
The Evolution of CSS APP 17

Appendix C

Responsive Web Design

Introduction APP 19
Responsive Web Design Techniques APP 19
Responsive Web Design Tools APP 21
Other Mobile Strategies APP 21

Appendix D

Search Engine Optimization (SEO)

Introduction APP 23
How Search Engines Work APP 23
SEO Techniques APP 24
SEO Careers APP 24

Glossary/Index IND 1

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

Preface

In this Shelly Cashman Series® *Web Design: Introductory*, *Fifth Edition* book, you will find an educationally sound and easy-to-follow pedagogy that artfully combines screen shots, marginal elements, and text with full color to produce a visually appealing and easy-to-understand presentation of web design. This textbook conveys useful design concepts and techniques typically not addressed in web authoring textbooks. It explains the connections between a detailed design plan that considers audience needs, web site design, and various technical issues. Students learn how to balance these elements to create a successful, responsive web site.

The book's seven chapters emphasize key written concepts and principles with numerous Design Tips boxed throughout the text. A variety of challenging research-based and hands-on activities both within and at the conclusion of each chapter test comprehension, build web research skills and design awareness, and encourage critical thinking about current issues in web design.

Objectives of This Textbook

Web Design: Introductory, *Fifth Edition* is intended for a one-unit introductory web design course, or a web authoring course that teaches web design techniques and also covers HTML, creating device- and platform-independent websites using responsive web design techniques, CSS, and SEO. The objectives of this book are to:

- Present a practical approach to web design using a blend of traditional development guidelines with current technologies and trends, including responsive web design
- Give students an in-depth understanding of web design concepts and techniques that are essential to planning, creating, testing, publishing, and maintaining web sites
- Define and describe in detail the six steps in developing a solid web design plan: identify the website's purpose and target audience; determine the website's general content; select the website's structure; specify the website's navigation system; design the look and feel of the website; and test, publish, and maintain the website
- Present the material in a full-color, visually appealing and exciting, easy-to-read manner with a format that invites students to learn
- Provide students with Toolkit marginal elements that indicate related content available in the appendices
- Direct students to the web to do additional research and allow them to evaluate and assess the design techniques and technologies discussed in the book by providing them with search terms in the Q&A marginal elements, Your Turn exercises, and end-of-chapter exercises
- Provide an ongoing case study and assignments that promote student participation in learning about web design

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

Distinguishing Features

The distinguishing features of *Web Design: Introductory, Fifth Edition* include the following:

Responsive Web Design

This text focuses on the basic concepts of responsive web design that teach considerations for creating websites that are device- and platform-independent.

A Blend of Traditional Development with Current Technologies

This book goes beyond a theoretical view of web design; every effort has been made to use procedures, tools, and solutions that parallel those used by web designers in today's business world.

Realistic examples support definitions, concepts, and techniques, enabling students to learn in the context of solving realistic problems, much like the ones they will encounter while working in the web design field. In this textbook, students learn to apply best practices while avoiding common pitfalls. In addition, the numerous Design Tips summarize and highlight important topics.

Visually Appealing

The design of this textbook combines screen shots, drawings, marginal elements, boxes, tables, and text into a full-color, visually appealing, and easy-to-read book. The many figures in the book clarify the narrative, reinforce important points, and show screen shots that reflect the latest trends in web design. The marginal elements and boxes highlight features such as exploratory exercises, design topics, common questions and answers, and search terms for students to do additional research on the web.

Introductory Presentation of Web Design

No previous web design experience is assumed, and no prior programming experience is required. This book is written specifically for students for whom continuity, simplicity, and practicality are essential.

DESIGN TIP

More than 80 Design Tips are boxed throughout the book. The function of the Design Tips is to emphasize important web design concepts of which students should be aware as they design websites.

Toolkit Feature

The new Toolkit elements in the margins throughout the book indicate relevant, additional coverage in one of the Appendices on HTML, CSS, RWD, and SEO so students can learn more.

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

YOUR TURN

Your Turn Exercises

Multiple Your Turn exercises within each chapter provide hands-on activities that allow students to put concepts and skills learned in the chapter to practical, real-world use. Your Turn exercises call for critical thinking and often require online research.

Q&A Boxes

These marginal annotations provide answers to common questions that complement the topics covered, adding depth and perspective to the learning process.

Organization of This Textbook

Web Design: Introductory, *Fifth Edition* provides basic instruction on how to plan and design a successful website that achieves the website's intended purpose. The material comprises seven chapters, four appendices, and a glossary/index.

CHAPTER 1 — THE ENVIRONMENT AND THE TOOLS In Chapter 1, students are introduced to the Internet, World Wide Web, websites, and web pages. Topics include domain names; how the Internet and the web influence society; methods and devices users use to connect to the Internet and the web; types of websites; tools for creating websites; and web design roles.

CHAPTER 2 — WEB PUBLISHING FUNDAMENTALS In Chapter 2, students are introduced to the advantages of web publishing, basic design principles, and writing techniques for the web. Topics include publishing advantages related to connectivity, timeliness, interactivity, reduced production costs, and economical, rapid distribution; responsive web design issues; balance and proximity; contrast and focus; unity; scannable text; using color as a design tool; and technical, privacy, accessibility, and usability issues.

CHAPTER 3 — PLANNING A SUCCESSFUL WEBSITE: PART 1 In Chapter 3, students are introduced to the initial three steps in the six-step planning process for developing a solid website design plan: (1) identify the website's purpose and target audience, (2) determine the website's general content, and (3) select the website's structure. Topics include identifying a specific topic for a website; defining target audience wants, needs, and expectations; choosing content; adding value-added content; and using an outline, storyboard, or flowchart to plan the site's structure.

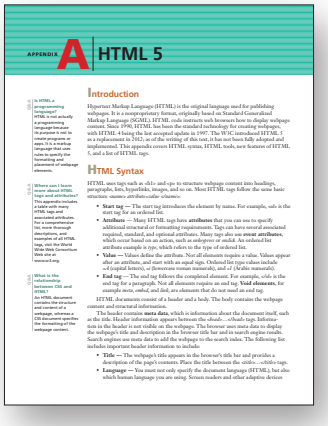
CHAPTER 4 — PLANNING A SUCCESSFUL WEBSITE: PART 2 In Chapter 4, students are introduced to the remaining three steps in the planning process for developing a design plan: (4) specify the website's structure, (5) design the look and feel of the website, and (6) test, publish, and maintain the website. Topics include the relationship between page length, content placement, and usability; maintaining visual consistency across all pages at the site using color and page layout; and creating both a user-based and a user-controlled navigation and search system that works with touch screens and all device types. A final design plan checklist is provided.

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

CHAPTER 5 — TYPOGRAPHY AND IMAGES In Chapter 5, students are introduced to typography and images for the web environment. Topics include typographic principles, guidelines, and tips; web image file formats and sources; and optimization techniques for creating web-ready images.

CHAPTER 6 — MULTIMEDIA AND INTERACTIVITY ELEMENTS In Chapter 6, students are introduced to the basics of web multimedia and interactivity and methods to add these elements to web pages. Topics include guidelines and sources for using multimedia; types of web page animation; adding and editing web page audio and video; and web-based forms, avatars, live chat, and other interactive web page elements.

CHAPTER 7 — PROMOTING AND MAINTAINING A WEBSITE In Chapter 7, students learn how to implement a plan to test, publish, promote, and maintain a website successfully. Topics include prepublishing testing of webpages; acquiring server space and uploading a website's files to a server; promoting a published website using search tools, social media, and online advertising networks; the importance of regular website maintenance; and using web analytics to evaluate website performance.


APPENDIX A HTML 5

Introduction

HTML Syntax

APPENDIX A — HTML 5 This Appendix is a reference for HTML, a markup language used to create webpages. Knowing the basics of HTML syntax and learning about the latest version, HTML 5, allows students to troubleshoot and/or optimize the sometimes-problematic code generated by WYSIWYG editors. Additionally, a fundamental knowledge of HTML 5 tools helps interpret the source code of features and functions found on other websites that students might want to include on their own sites.

APPENDIX B — CASCADING STYLE SHEETS (CSS) The CSS Appendix is a brief introduction to Cascading Style Sheets in support of the discussion of CSS in various chapters in this book.

APPENDIX C — RESPONSIVE WEB DESIGN This new Appendix provides a brief introduction to the decision-making process and the technologies and considerations involved when creating a site for multiple devices, platforms, and screen sizes.

APPENDIX D — SEARCH ENGINE OPTIMIZATION (SEO) This new Appendix introduces students to how search engines rank and evaluate websites to include in search results, as well as techniques for and careers in SEO.

End-of-Chapter Student Activities

A notable strength of the Shelly Cashman Series textbooks is the extensive student activities at the end of each chapter. Well-structured student activities can make the difference between students merely participating in a class and students retaining the information they learn. The activities in this book include the following:

Chapter Review

LEARN IT ONLINE

TRENDS

AT ISSUE

- **CHAPTER REVIEW** A review of chapter highlights is presented at the end of each chapter.
- **TERMS TO KNOW** This list of key terms found in the chapter together with the page numbers on which the terms are defined helps students master the chapter material.
- **TEST YOUR KNOWLEDGE** Two pencil-and-paper activities are designed to test students' understanding of the material in the chapter: matching terms and short-answer questions.

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

- **LEARN IT ONLINE** Reinforce what you learned in this chapter with games, exercises, training, and many other online activities and resources. Reinforcement activities and resources are available at no additional cost on www.cengagebrain.com.
- **TRENDS** The Trends exercises encourage students to explore the latest developments in the web design technologies and concepts introduced in the chapter.
- **@ ISSUE** Web design is not without its controversial issues. At the end of each chapter, two topics are presented that challenge students to examine critically their perspective of web design concepts and technologies.
- **HANDS ON** To complete their introduction to web design, these exercises require that students use the web to gather and evaluate additional information about the concepts and techniques discussed in the chapter.
- **TEAM APPROACH** Two Team Approach assignments engage students, getting them to work collaboratively to reinforce the concepts in the chapter.
- **CASE STUDY** The Case Study is an ongoing development process in web design using the concepts, techniques, and Design Tips presented in each section. The Case Study requires students to apply their knowledge starting in Chapter 1 and continuing through Chapter 7 as they prepare, plan, create, and then publish their own websites.

Instructor Resources

The Instructor Resources include both teaching and testing aids and can be accessed online at www.cengage.com/login.

- **INSTRUCTOR'S MANUAL** Includes lecture notes summarizing the chapter sections, figures and boxed elements found in every chapter, teacher tips, classroom activities, lab activities, and quick quizzes in Microsoft Word files.
- **SYLLABUS** Contains easily customizable sample syllabi that cover policies, assignments, exams, and other course information.
- **FIGURE FILES** Illustrations for every figure in the textbook are available in electronic form. Figures are provided both with and without callouts.
- **POWERPOINT PRESENTATIONS** A one-click-per-slide presentation system provides PowerPoint slides for every subject in each chapter. Presentations are based on chapter objectives.
- **TEST BANK AND TEST ENGINE** Test Banks include questions for every chapter, feature objective-based and critical-thinking question types, and include page number references and figure references, when appropriate.
- **ADDITIONAL ACTIVITIES FOR STUDENTS** Consists of Chapter Reinforcement Exercises, which are true/false, multiple-choice, and short answer questions that help students gain confidence in the material learned.

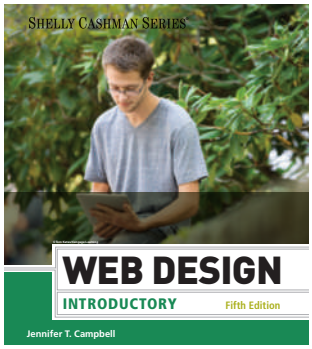
Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

CourseNotes

Cengage Learning's CourseNotes are six-panel quick reference cards that reinforce the most important and widely used features of a software application or technology concept in a visual and user-friendly format. CourseNotes serve as a great reference tool for students, both during and after the course. CourseNotes are available for Adobe Dreamweaver CS6, HTML 5, Web 2.0, Buyer's Guide: Tips for Purchasing a New Computer, Best Practices in Social Networking, Hot Topics in Technology, and many more. Visit **www.cengagebrain.com** to learn more!

About Our Covers

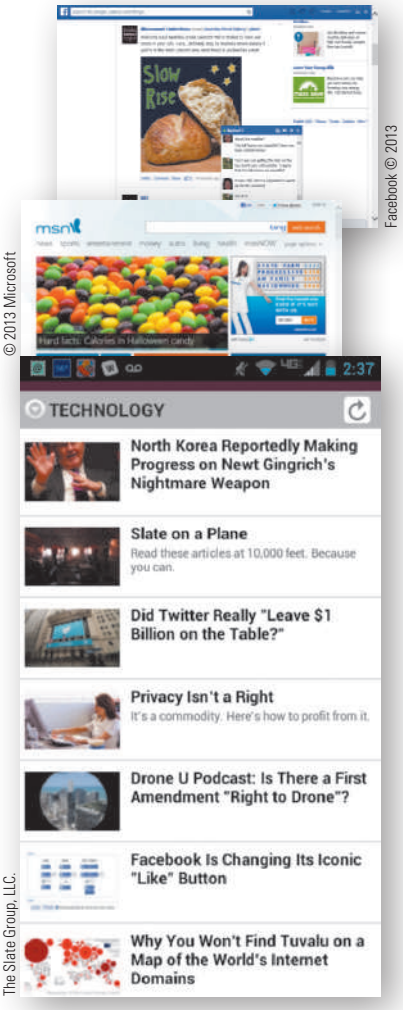
The Shelly Cashman Series is continually updating our approach and content to reflect the way today's students learn and experience new technology. This focus on student success is reflected on our covers, which feature real students from The University of Rhode Island using the Shelly Cashman Series in their courses, and reflect the varied ages and backgrounds of the students learning with our books. When you use the Shelly Cashman Series, you can be assured that you are learning computer skills using the most effective courseware available.



Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

1 The Environment and the Tools



Introduction

Designing and building a website is no longer a difficult, intimidating undertaking; evolving web technologies have simplified the job. Applying web technologies is only part of what is required to produce a successful website that is viewable on multiple devices and screen sizes. A website that effectively communicates, educates, entertains, or provides a venue for conducting business transactions also requires good web design. This book explains the basic elements of good web design and shows you how to develop compelling websites and webpages for specific purposes or audiences. Chapter 1 begins the process by describing the Internet and the World Wide Web. Next, you learn about the various ways users connect to the Internet. The chapter then describes different types of websites and the tools for creating them. Finally, the chapter discusses the various roles, responsibilities, and skills essential to successful web design.

Objectives

After completing this chapter, you will be able to:

1. Describe the Internet and the World Wide Web
2. Discuss ways to access the Internet and the web
3. Categorize types of websites
4. Identify web design tools
5. Explain web design principles, roles, and required skills

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

The Internet and the World Wide Web

A computer **network** consists of connected computers, mobile devices, printers, and data storage devices that share computing resources and data. Computer networks are everywhere — in home offices, in student computer labs, in public places such as coffee shops and libraries, and in the offices of organizations and businesses around the world. The **Internet** is a worldwide public network (Figure 1-1) that connects millions of these private networks. For example, on a college campus, the student lab network, the faculty computer network, and the administration network can all connect to the Internet.

Figure 1-1 The Internet is a worldwide public network that connects private networks.

© Cengage Learning; © Mmaxer/Shutterstock.com; © Alfonso de Tomas/Shutterstock.com; © SSSCCC/Shutterstock. com; © iStockphoto.com/Petar Chernaev/Pixelfit; © amfoto/Shutterstock.com; © iStockphoto.com/scanrail; ©iStockphoto.com/scanrail; © iStockphoto.com/sweetym; Source: Microsoft; © Oleksiy Mark/Shutterstock.com; Source: Cengage Learning; © iStockphoto.com/SKrow; © Cengage Learning; © iStockphoto.com/skodonnell; Source: Apple Inc; © iStockphoto.com/skodonnell; Source: Nutrition Blog Network; © iStockphoto.com/arattansi; Source: Microsoft; © Oleksiy Mark/Shutterstock.com; Source: Microsoft; © Cengage Learning

Q&A **What is Web 2.0?**
Web 2.0 technologies and practices are designed to make users' web experiences interactive by incorporating social media and user-driven content into webpages.

Q&A **What is Internet2?**
Internet2 is a major cooperative initiative among academia, industry, and government agencies to increase the Internet's capabilities and solve some of its challenges. The nonprofit initiative has more than 300 university, corporate, government, and international members and sponsors devoted to developing and using new and emerging network technologies that facilitate research and education.

World Wide Web

The **World Wide Web (web)** is a part of the Internet that consists of connected computers called **web servers** that store electronic documents called webpages. A **webpage** is a specially formatted document that can contain images, text, interactive elements, and hyperlinks, which are links to other pages. A **website** is a group of related webpages. A website's primary page, or **home page**, typically provides information about the website's purpose and content. Figure 1-2 shows the home page of Jive Software. Jive's home page includes standard home page elements, including a company logo, navigation elements, a search feature, and links to additional content.

A **hyperlink**, or simply a **link**, is a word, phrase, or image that connects webpages. Figure 1-3 shows the Gourmet.com home page and the webpage that appears when you click a link on the home page. You often can identify a text link by its appearance. Text links usually are bold, underlined, or differ in color from the rest of the text. An image link might be more difficult to visually identify; however, if you are using a desktop or

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

Figure 1-2 A website's primary page is its home page.

Q&A

What is a landing page?

A **landing page** is the page on a website that a visitor sees when they tap or click a link from an ad, search engine result, or social media promotion. The copy on a landing page is specific to the method by which the user arrived at the page, and is often used as a marketing tool.

Figure 1-3 Webpages at the same website or across different websites are connected by links.

laptop computer, pointing to either a text or image link with the mouse pointer changes the pointer from an arrow to a hand pointer. When you tap or click a link, you might view a picture or video, listen to a song, jump to a different webpage at the same website, or move to a webpage at a different website. Exploring the web by moving from one webpage to another is sometimes called **browsing** or **surfing the web**. To visually indicate that you have previously tapped or clicked a text link, the color of a tapped or clicked text link might change. You can see this change in color when you return to the webpage containing the tapped or clicked link.

Q&A

Who originally created the World Wide Web?

Tim Berners-Lee, a programmer at CERN in Switzerland, is credited with the early vision and technological developments that led to today's World Wide Web.

DESIGN TIP

Whether you choose to indicate hyperlinks in text by color, bold, or underline, be consistent throughout your website.

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

Although some use the terms *Internet* and *web* interchangeably, remember that the Internet and the web are not one and the same. As stated previously, the Internet is a worldwide public network that links private networks. The Internet gives users access to a variety of resources for communication, research, file sharing, and commerce. The web, a subset of the Internet, is just one of those resources.

Q&A **What is cloud computing?**
The term **cloud computing** refers to an environment where files and software are stored and shared online. For example, Google Drive™ provides a suite of online software, file storage, and collaboration tools. You can edit, save, and share documents without downloading either the software or the files to your computer.

Influence on Society

The Internet and the web have significantly influenced the way the world communicates, educates, entertains, and conducts business. Friends, families, and business colleagues exchange electronic messages using email, chat, and texting. Students use the web for research, to access podcasts or transcripts of lectures, or to collaborate on a group project. People of all ages access the Internet and the web for entertainment using gaming, music, video, and other apps on their computers or mobile devices. Consumers who shop online save time, gas, and sometimes money by taking advantage of online shopping websites and websites that offer reviews and pricing comparisons. Businesses use Internet and web technologies to interact with their suppliers and customers for increased productivity and profitability. Businesses can also use tools such as videoconferencing to reduce costs associated with business travel or to allow employees to telecommute.

Q&A **What is an app?**
An **app** (short for application) is a software program. The term, app, typically refers to programs that run on mobile devices (mobile apps) or the web (web apps). Apps are an integral part of Internet technology. This book focuses on general web design principles rather than app development, design, and integration.

COMMUNICATION Individuals and organizations of all types use websites to communicate ideas and information. By effectively designing webpages and selectively choosing content, you can ensure that your website's webpages deliver the website's message successfully and persuasively. When a webpage's design is consistent, balanced, and focused, and the content communicates trustworthiness, timeliness, and value, such as the MSN home page shown in Figure 1-4, you are more likely to save a link to the webpage, called a **bookmark** or **favorite** when using a browser, or create a **shortcut** to it on your desktop or mobile device's home screen so you can revisit the website. On the other hand, you quickly will move on from a poorly designed website or if the content appears unreliable, outdated, or trivial. You will learn more about design values in Chapter 2.

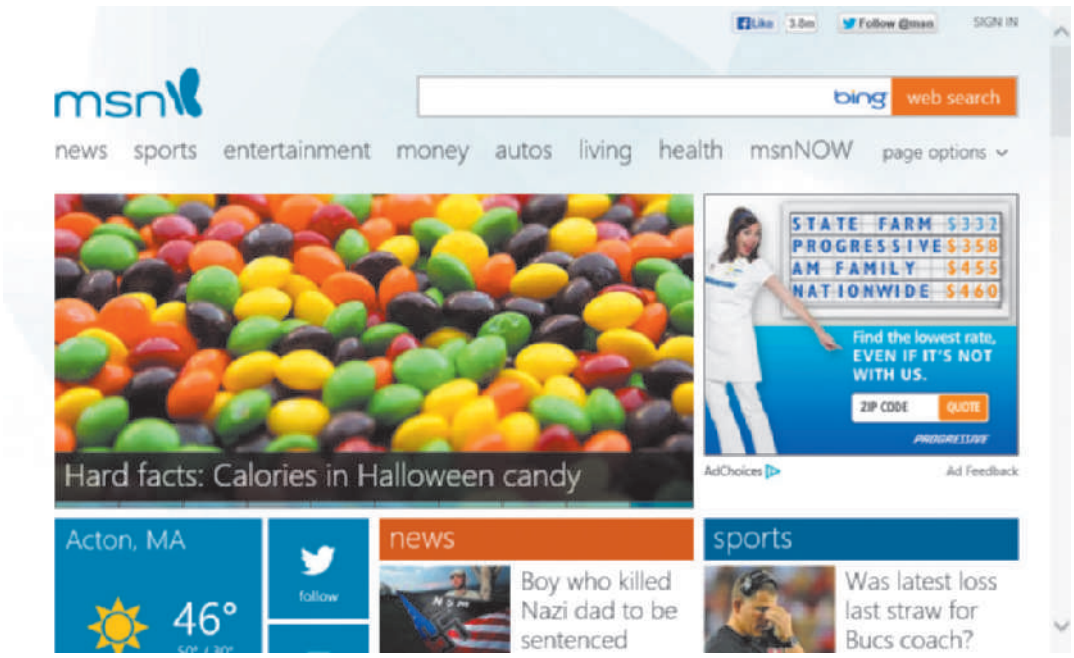


Figure 1-4 The MSN home page communicates up-to-date, accurate information.

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

Design your website so that it communicates trustworthiness, timeliness, and value.

DESIGN TIP

Other communication options that rely on Internet and web technologies include email, blogging, social networking, social bookmarking, chat, instant messaging, virtual meetings and collaborative workspaces, video sharing, VoIP, interactive gaming, and 3D virtual worlds.

Businesses and individuals heavily rely on electronic messages called **email**. Popular email software, such as Mozilla® Thunderbird®, Microsoft Outlook®, Google Gmail™, or Windows Live Mail®, allows users to attach graphics, video, sound, and other computer files to email messages. Email is a fast, inexpensive, and widely used online communication tool.

Internet Relay Chat (IRC) and **web-based chat** are communication technologies that provide a venue, such as a chat room or discussion forum, where people with common interests can exchange text, video, files, or multimedia messages in real time. **Instant messaging**, also called **IM chat**, is another popular way individuals can exchange one-to-one messages in real time using a chat window that is only visible to those participating in the chat. Examples of IM chat programs are AOL Instant Messenger® (AIM), Yahoo! Messenger, Windows Live Messenger®, ICQ®, and Trillian™. The difference between IRC and IM is that IRC chats are public exchanges between two or more people in a chat room who do not necessarily know each other. With an IM program, you chat privately with people you know. Social networking platforms such as Facebook (Figure 1-5) and Twitter include IM technology. **Mobile IM (MIM)** enables users to chat using mobile devices.

Q&A

Is the Internet's societal influence all good?

Being constantly connected has its price. In the past, employees' workdays were done when they physically left the office, but now they can be expected to keep on top of work-related communication during what used to be personal, family, or leisure time. The need to constantly check social media, sports scores, or text messages can have a negative effect on human relationships. To learn more, use a search engine to search for *the Internet's negative effects*.

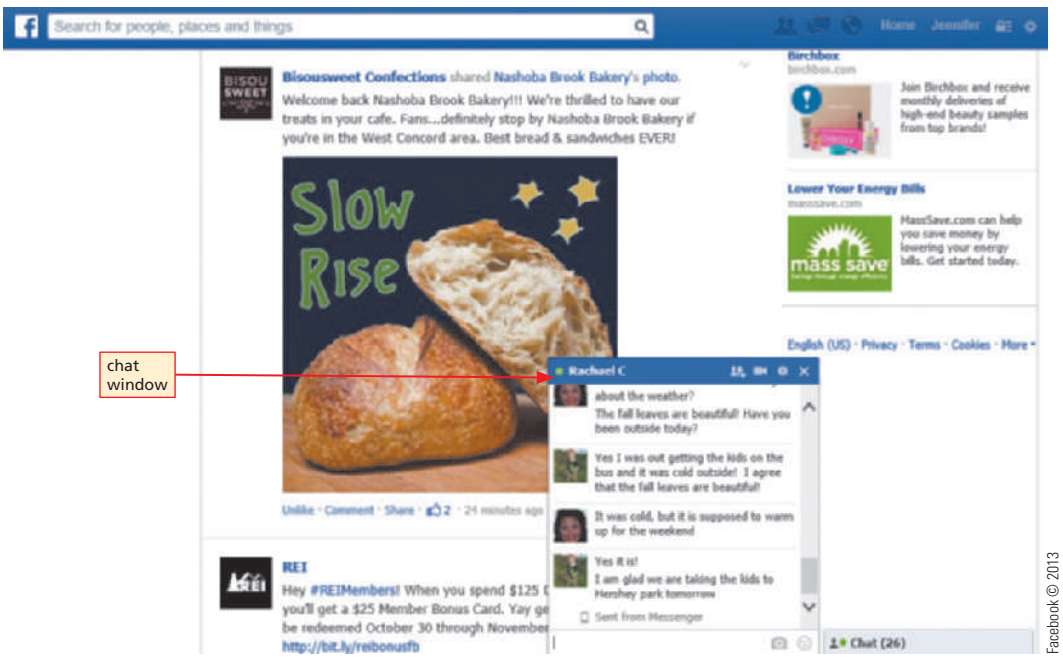


Figure 1-5 IM chat programs allow users to exchange private messages in real time.

Technology vendors, such as Microsoft, WebEx, and GoToMeeting (Figure 1-6 on the next page), provide access to **collaborative workspaces** or **virtual meeting spaces**, which are websites that allow users to communicate with each other using text, audio, video, whiteboard, and shared files without leaving their own desks. Businesses that use collaborative workspaces and virtual meeting spaces can improve employee productivity and reduce expenses.

Q&A

What is text speak?

Text speak describes abbreviations and shortcuts for common phrases commonly used by text and chat users, such as LOL (laugh out loud) or gr8 (great). For more information, use a search engine to search for *text speak*.

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

Figure 1-6 Collaborative workspaces support teamwork from remote locations.

A **blog** (short for weblog), such as What's Your Brave? (Figure 1-7), is an online journal or diary. Millions of people go online to share ideas and information by hosting and participating in blogs — a process called **blogging**. Many blogs enable and encourage users to add comments to posts. **Video sharing** websites, sometimes called **video blogging** websites, such as YouTube and Vimeo (Figure 1-7), allow users to share and comment on personal and professional videos.

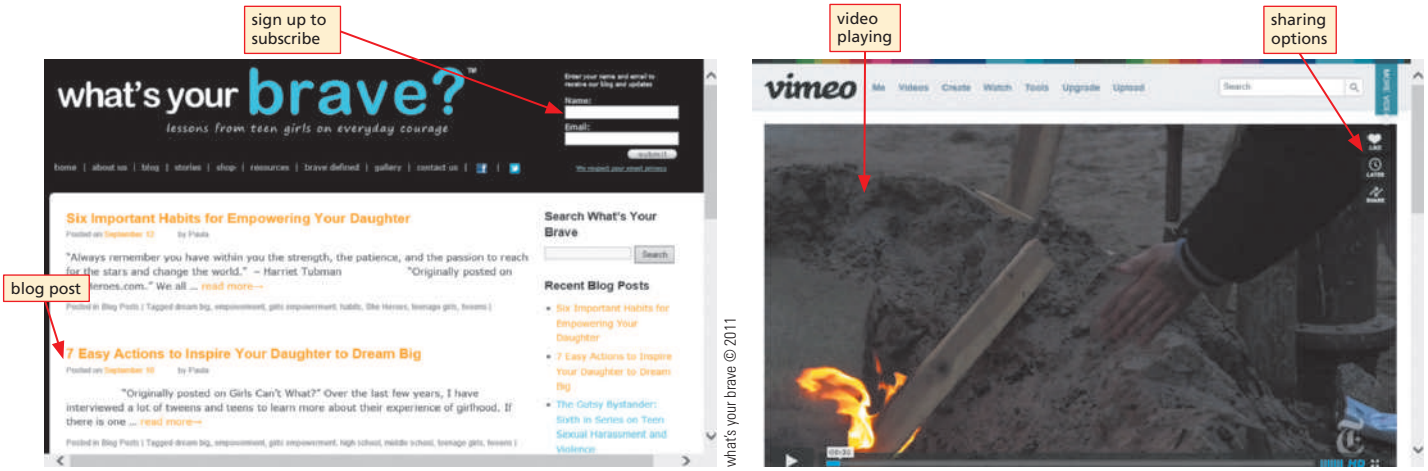


Figure 1-7 Text and video blogging websites allow web users to share ideas, information, and video files.

Social networking is the term used to describe websites and apps, such as Twitter, Instagram, Facebook, and LinkedIn (Figure 1-8), that allow participants to create a personal network of friends or business contacts. Users then use communication tools provided by the website to interact with those in their personal network by sharing text, comments, pictures, contacts, and more. **Social bookmarking**, provided by websites such as Delicious, Newsvine, FARK, StumbleUpon, and Digg (Figure 1-8), allows users to share their webpage favorites, bookmarks, and **tags** — keywords that reference specific images or documents — with others.

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

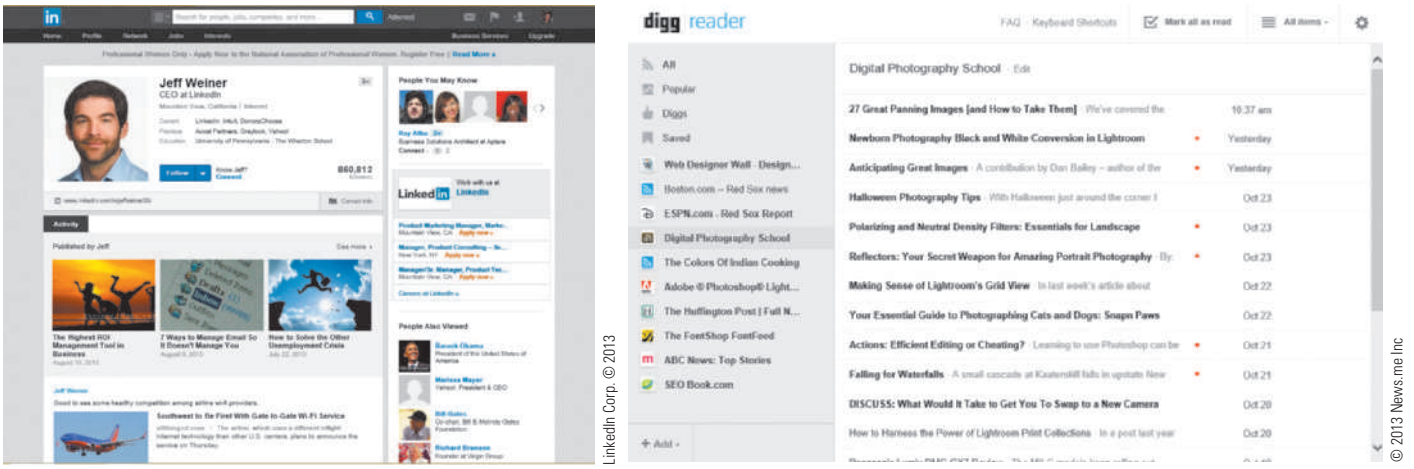


Figure 1-8 Social networking websites and social bookmarking websites allow users to share information with one another.

Gamers by the millions interact with each other by playing **massively multiplayer online games (MMOGs)**, such as Minecraft™ and World of Warcraft®. Others create alternative personas that live their lives in **3D virtual worlds**, such as Second Life® or Entropia Universe®.

A **wiki** is a group of related webpages to which users add, edit, or delete content by using a web browser. A well-known example of a wiki is Wikipedia, an online encyclopedia. Figure 1-9 shows a Wikipedia webpage that displays information about mobile web browsers.

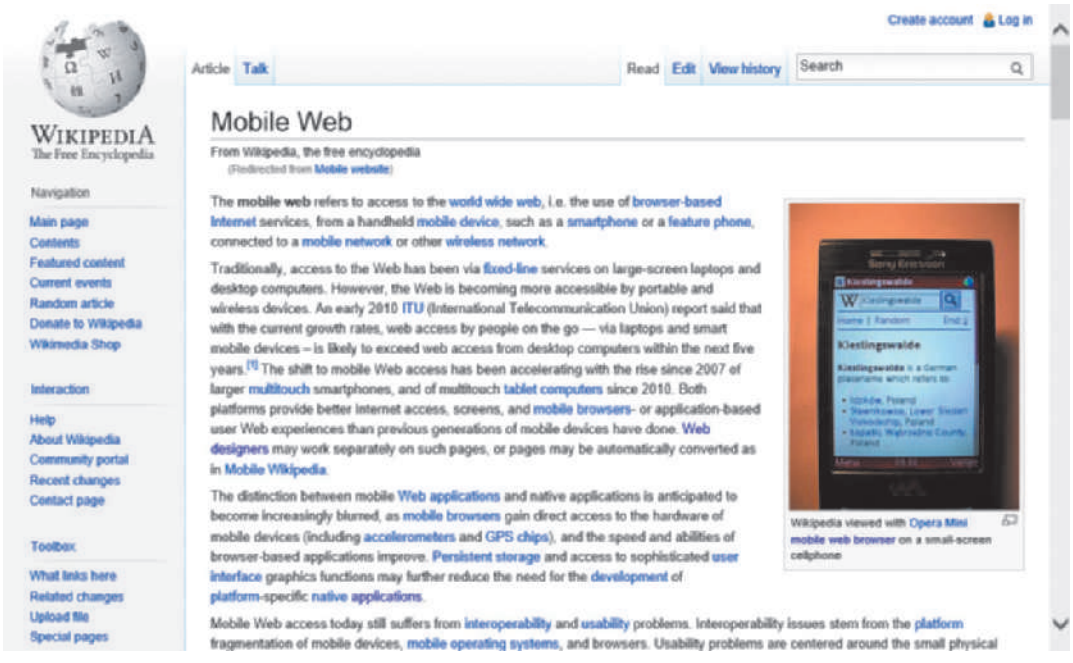


Figure 1-9 Wikipedia and other wiki websites enable users to catalog and manage content collaboratively.

Q&A

What does it mean to "go viral"?

When many users view and share an article, blog entry, website, or video with others using social networking, blogs, and mass media, exposing the content to thousands or millions of users in a short amount of time, inspiring commentary and in some cases imitations, the content has "gone viral."

Q&A

What are hashtags?

A **hashtag** is a word or phrase preceded by the # symbol. Posters on Twitter and social networking websites such as Instagram commonly use hashtags. Use of hashtags creates a group of related messages, such as all messages regarding a TV show, a certain celebrity, or an event such as an election.

EDUCATION There are very few topics you cannot learn about by turning to the web. You can take an online course from an academic institution to earn a degree or certificate, or watch a video or read a blog post by an amateur expert. Several universities and academic institutions, such as MIT, publish some or all of their educational materials online, including homework and video lectures, so that they are free and open to everyone

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

(Figure 1-10). Instructors often use the web to publish podcasts or videos of lectures, webpage links for research, syllabi and grades, and more for their students.

Q&A

What is flipped classroom?
Flipped classroom is a teaching model where students learn the concepts at home, often using web technologies such as ebooks and instructor-created videos of lectures. Classroom time is spent employing the practices learned at home.

© 2001–2013 Massachusetts Institute of Technology

Figure 1-10 The web offers formal and informal teaching and learning opportunities.

DESIGN TIP

Any formal or informal educational website should contain content that is timely, accurate, and appealing. Such websites also should include elements to provide feedback, maintain records, and assess learning. Educational websites should also include information about the authority or experience of the website's content providers.

ENTERTAINMENT AND NEWS Interactive multimedia experiences and continually updated content lure millions of people to the web for entertainment and news. Popular entertainment websites offer music, videos, sports, games, and more. For example, you can use the web to watch last night's episode of your favorite television program, check out entertainment news at IMDb (Figure 1-11), or play fantasy baseball at mlb.com. At sophisticated entertainment and news websites such as NBCNews.com (Figure 1-11), you can read news stories or watch news clips or video clips from programs. Additionally, the NBCNews website provides interactive elements, such as the ability to add comments or share an article on your social media profile.

DESIGN TIP

Include methods to share your website's content by providing links to send content using email, or post to the user's Facebook page, RSS feed, or account on Pinterest or Twitter. Also provide links to related content that website users would find interesting and relevant.

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.

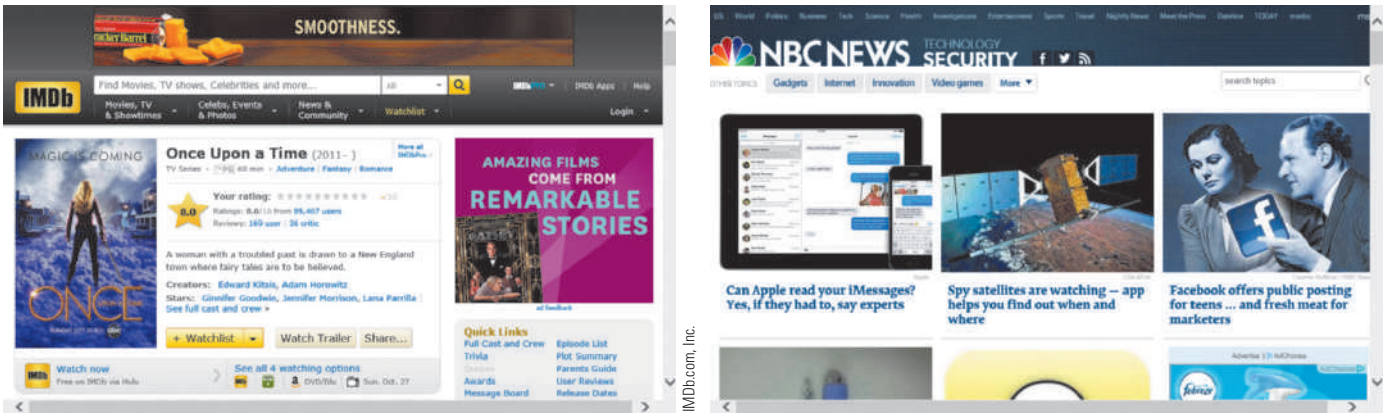


Figure 1-11 Entertainment and news websites provide continually updated multimedia content.

E-COMMERCE **Electronic commerce** or **e-commerce** encompasses a wide variety of online business activities, including consumer shopping and investing and the exchange of business data and transactions within a company or among multiple companies (Figure 1-12). For example, a pet groomer might offer his or her services using an e-commerce website where a pet owner could find valuable information, such as the groomer's telephone number, location, list of services, and rates charged; the pet owner could then schedule an appointment online. At the other end of the e-commerce spectrum, a large manufacturing company could use the Internet and the web to communicate policies and procedures to its employees, exchange business information with its vendors and other business partners, process sales transactions, and provide online support to its customers.

E-commerce websites can be categorized by the participants involved in the transactions (Figure 1-13), such as businesses and consumers.

E-Commerce Transaction Types

Category	Description
Business-to-consumer (B2C) e-commerce	B2C e-commerce involves the sale of an endless assortment of products and services directly to consumers. Transactions take place between an online business and an individual consumer.
Business-to-business (B2B) e-commerce	B2B e-commerce involves the sale of products and services and the exchange of data between businesses, and accounts for the majority of e-commerce transactions in the corporate world.
Consumer-to-consumer (C2C) e-commerce	In C2C e-commerce, business transactions occur between consumers. Examples of C2C e-commerce include online auctions and person-to-person classified ads.

© 2015 Cengage Learning

Figure 1-12 B2C, B2B, and C2C are types of e-commerce transactions.

DESIGN TIP

To develop an e-commerce website, you must determine the potential customers for your products or services. If appropriate to do so, associate your e-commerce website with a database that supplies up-to-date product information such as available inventory, sizes, colors, and more. Provide a search feature so customers can easily find what they need, and electronic payment services, such as direct purchase or a third-party payment service such as PayPal.

Copyright 2015 Cengage Learning. All Rights Reserved. May not be copied, scanned, or duplicated, in whole or in part. Due to electronic rights, some third party content may be suppressed from the eBook and/or eChapter(s).
Editorial review has deemed that any suppressed content does not materially affect the overall learning experience. Cengage Learning reserves the right to remove additional content at any time if subsequent rights restrictions require it.