

digital media

Concepts & Applications 4e



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digital media

Concepts & Applications 4e



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Fourth Edition**

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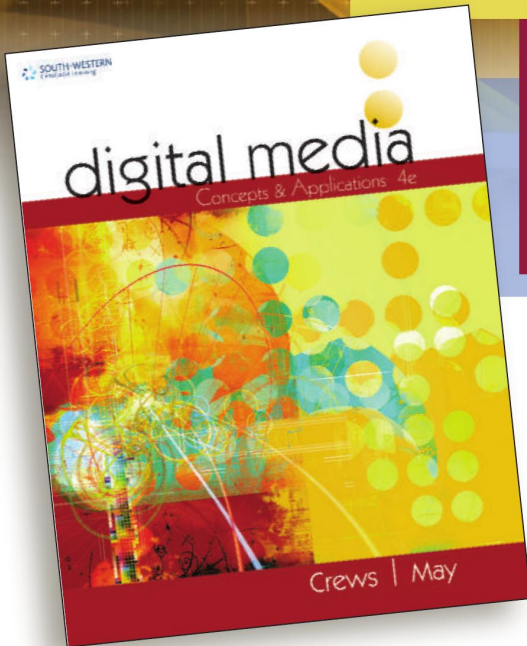
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Give Your Students an Edge in Today's

Media-Driven Marketplace

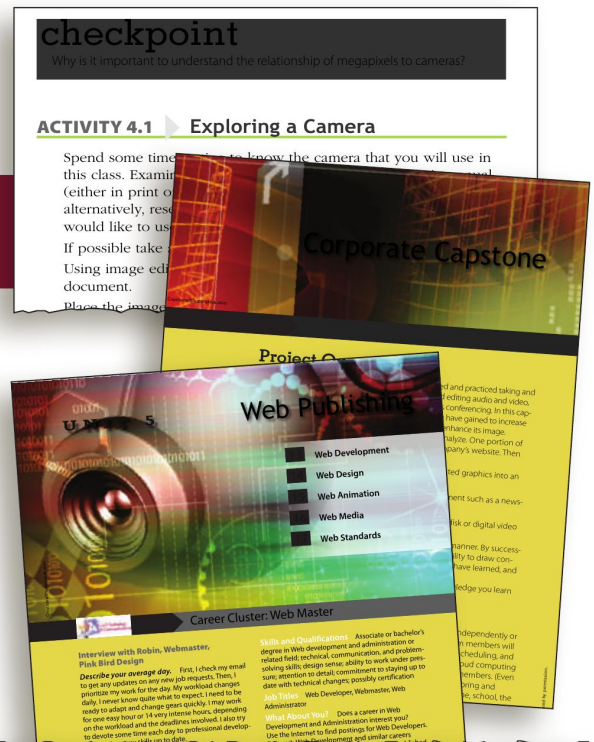


Digital Media, 4E equips students with the tools and skills to succeed in today's digital-rich workplace by teaching them how to effectively use business-standard software applications to complete projects and solve real-world problems. The text's seven units give students hands-on experience with real-world projects using software from Adobe (Creative Cloud), Microsoft (Office 2013), and more.

A Cut Above

Combine comprehensive coverage with timely real-world applications straight from the marketplace.

- ▶ **Complete coverage** of multimedia applications topics and activities provide a full year of instruction. Extremely thorough, each lesson includes activities and multiple applications covering digital imaging, print publishing, audio and video production, web publishing, presentations, and the changing business environment.
- ▶ **Corporate Capstone** provides real-world projects that integrate concepts learned throughout the course.
- ▶ **21st Century Skills Feature** covers business topics to enhance critical thinking and collaboration. Topics include taking initiative, career planning, communication and active listening, netiquette, organization and punctuality, presentation skills, time management, teamwork, and maintaining ethical standards.
- ▶ **Career Clusters** profile introduces each unit and demonstrates real-life application of multimedia skills to be learned.



Taking Initiative

Probably the best way you can advance your career is to take initiative at work. You should not stand around with nothing to do. If you complete an assignment, go to your supervisor and request something else to do. Do not wait to be given a new task—ask for more work and responsibility. Supervisors notice and respond favorably to employees who do so. One good way to take initiative at work is to find small ways to improve the way a job is done. Or consider doing a job in a slightly different way. Taking initiative on the job can be a bit tricky, though. Employers are not necessarily looking for workers to come in and start “running the show.” Taking initiative does not mean insisting that things be done your way. It means determining what your employer wants and needs and then doing it the best way possible.

Skills in Action: Think about ways you can take initiative in a classroom. Check with your instructor and follow through with at least one of them.

Raising the Bar

Lesson structure maximizes student mastery.

- ▶ **Lessons** within chapters provide the ideal learning timeframe for students. In addition, practice activities are located in the chapters at the point of learning.
- ▶ **Checkpoint** asks critical-thinking questions at the end of each lesson.
- ▶ **Portfolio**, a continuing project at the end of each unit, offers students the opportunity to practice skills they have learned and create a portfolio of their work.

Lesson 4.3 Adjusting Settings

Point-and-shoot cameras are designed to make choices for you to help ensure a good photograph. While these choices often result in very satisfactory images, it is helpful to know what changes the camera makes in your camera settings. Many cameras will let you override the choices if you are not getting exactly the shot you want.

Basics LO 4.5

A camera uses three components to capture an image. They consist of the (how fast the lens opens and closes), settings (how wide the lens opens to let in light), and the (speed at which the "film" captures an image).

All three of these functions work together in combination to produce an image. Changing any of these three settings will change the way your photograph appears. Point and shoots pick the combination that is likely to give you the best image. Many of these cameras provide pre-set special image types such as a (close-up) setting, a distance setting, or a sports setting. These special settings use different aperture, shutter speed, and ISO to capture the moment.

You can adjust the shutter speed to achieve specific and desired effects. For example, if your shutter speed is set to open and close slowly while you are taking a picture of a runner crossing the finish line, there is enough time to capture a series of movements, resulting in the runner's blur. If you have the shutter speed set to open and close briefly, then you may catch the specific instant when the runner's foot is coming down onto the finish line.

—Measures the rate at which a camera lens opens and closes.

—Indicates the size of a camera lens's opening.

—A standardized measurement of the speed with which a camera stores an image.

—A setting or lens that allows close-ups.

Portfolio



checkpoint

What is color theory and how can you use it in your projects?

ACTIVITY 5.2 Color Themes

1. Open an image editing program.
2. Create four rectangles of analogous colors to use in a presentation

Setting the Standard

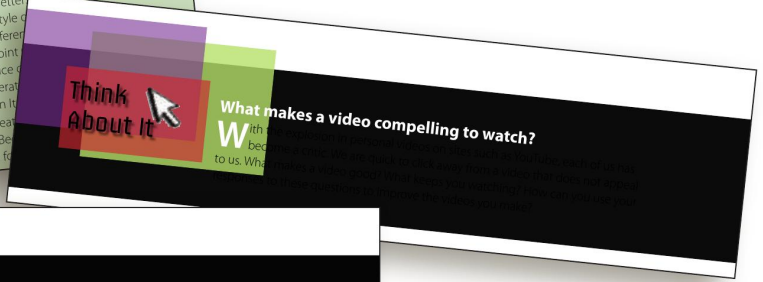
Integrated learning features enhance student engagement and comprehension.

- ▶▶ Innovative special features such as **History**, **Think About It**, and **Impact** provide additional information and ask critical-thinking questions for discussion of ethics and related topics.



History

Originally, the term "font" referred to a collection of metal letters set on a press and used to print a specific size and style. This means that each typeface was associated with many different sizes and styles of that specific typeface. So, for example, 14-point Caslon Bold. To produce 12-point Caslon Italic, the press operator would need to create a new set of metal pieces for 12-point Caslon Italic. In the computer age, the metal pieces once used to create type are replaced by information in computer files called font files. Because font files are scalable, size is no longer relevant in the definition of a font.



Think About It

What makes a video compelling to watch? With a video, you can see and hear what is being said to us. What makes a video compelling to watch?

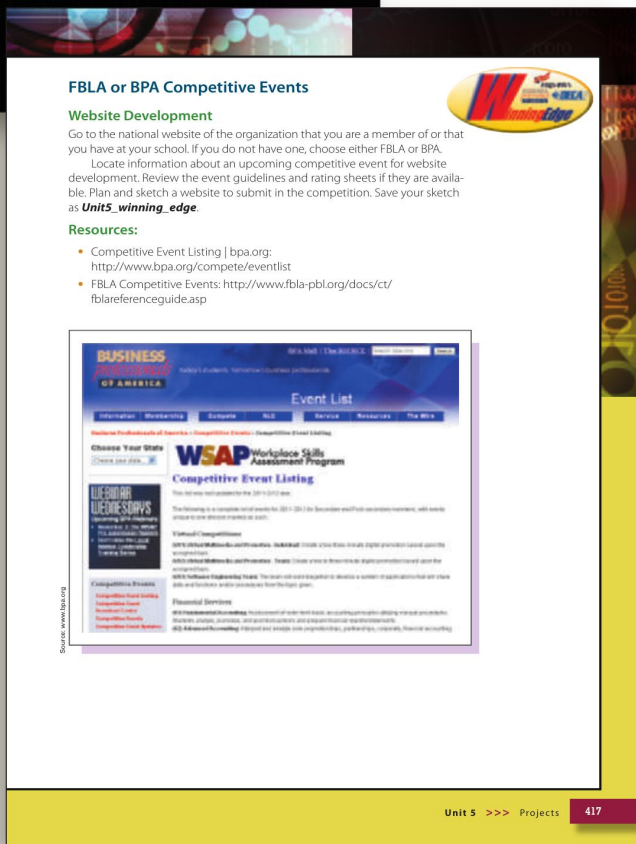


Impact

Graphic File Formats

Graphic files are often large because they contain more information than text files. This means that they take up more space on a hard drive or other storage device.

- ▶▶ **The Winning Edge** logo signifies sections of the text that help students prepare for Competitive Events in FBLA, DECA, and BPA.



FBLA or BPA Competitive Events

Website Development

Go to the national website of the organization that you are a member of or that you have at your school. If you do not have one, choose either FBLA or BPA. Locate information about an upcoming competitive event for website development. Review the event guidelines and rating sheets if they are available. Plan and sketch a website to submit in the competition. Save your sketch as **Unit's winning edge**.

Resources:

- Competitive Event Listing | bpa.org: <http://www.bpa.org/compete/eventlist>
- FBLA Competitive Events: <http://www.fbla-pbl.org/docs/ctw/fblareferenceguide.asp>

The Winning Edge

BUSINESS

Event List

WSAP Workplace Skills Assessment Program

Competitive Event Listing

Financial Services

Financial Services

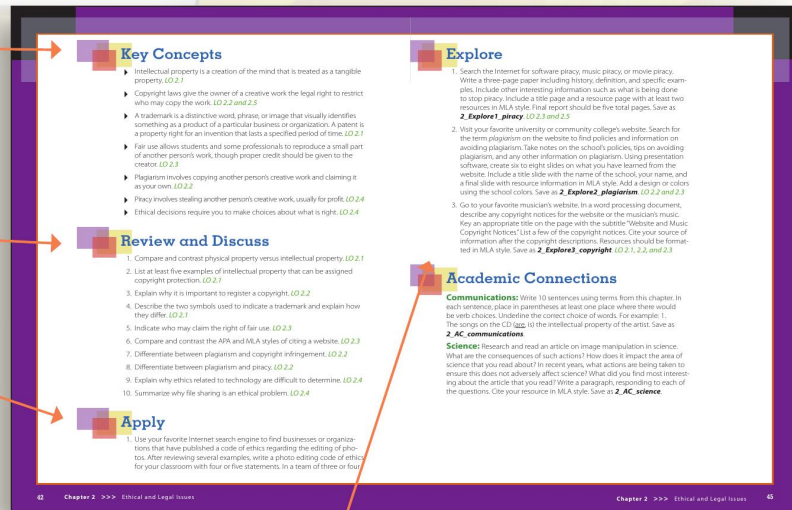
Unit 5 >>> Projects 417

Leading by Example

End-of-chapter features reinforce learning and help students put chapter concepts into practice.

►► **Key Concepts** provides a summary of concepts covered in the chapter that correlate to chapter learning outcomes.

►► End of chapter includes **Review and Discuss** questions as well as applications for hands-on practice (**Apply**).



►► **Unit Projects** provide integrated projects to reinforce the topics of several chapters in a unit.

►► **Explore** projects are for reinforcement.
►► **Academic Connections** provide open-ended activities in communications, writing, math, science, and social studies to apply the skills learned in digital media for core curriculum areas.

The Total Package

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Digital Media Companion Website

www.cengage.com/swep/digitalmedia4e

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Preface

To the Teacher

Long ago, educators had certain expectations. We knew what concepts students had to master to succeed in the career of their choice. We used textbooks and other resources to reinforce our knowledge.

Then, things changed as computers seemed to take over our lives. We had to teach new things for which we had no preparation, so we used books that taught the topics we did not know. The books provided us with a way to teach skills such as how to open and save a file, how to change a font, how to insert an image, and how to mail-merge a series of addresses.

The books we used looked more like cookbooks than textbooks. One could almost imagine the list of ingredients, followed by the steps, and then the instructions to bake at 350 degrees for 45 minutes for a perfect newsletter. The skills our students acquired with these recipes made it possible for them to learn to use a computer and specific software. We were satisfied that we were meeting the needs of our students.

Along the way, however, we lost something. We lost the idea that we should teach concepts and not just skills. We lost this idea because we were so inundated with the need to learn new and unfamiliar skills that we had no time to worry about concepts. We did what we had to do.

However, the world has changed again. We now know how to use several features in various software packages, create tables, use bulleted lists effectively, yet we strive to learn more. Our cookbooks are still useful, but they should no longer be our only instructional choice.

In today's world, we must teach students a whole new set of concepts. For example, in a business multimedia class, we must address the qualities of a good digital photograph and not just how to take a digital photograph. We must discuss what constitutes a professional PowerPoint design and not just how to add images to a slide show. We must address issues such as what typography can do for a sales proposal instead of limiting our instruction to ways of changing fonts.

As a result, our task has become even more challenging, yet exciting. Instead of relying on cookbooks alone, we now must choose books and materials that respond to this new set of needs. As you are previewing this textbook, look for the concepts. You will notice this book is not a series of recipes. Instead, it is designed to prepare your students for changes they will encounter in their careers. With this book, we can once again begin to feel that we are meeting the needs of our students.

To the Student

Digital media is not about learning everything there is to know about creating graphics, web pages, and PowerPoint presentations. Each of these tasks alone would be enough to fill at least a semester or year-long course. This textbook is instead about learning what concepts drive this field. So, when you enter the world of business, you can understand the jargon, know what expectations are reasonable, and direct in a knowledgeable manner those who do create complex image management tasks.

The course material consists of the student text and supplementary materials found on the Instructor Resource CD (IRCD) and product website (www.cengage.com/swep/digitalmedia4e). Some files will be provided by your instructor. The textbook is software independent and is designed to last through many changes of software. The materials available on the IRCD are software specific, focusing primarily on products from Microsoft and Adobe.

In the text, you will learn about creating powerful presentations, scripting languages, and video editing. You will learn what happens when large graphic files are added to web pages. You will understand the difference between CMYK and RGB color. You will also fully explore what features are available in PowerPoint. In addition, you will develop a keen sense of what is appropriate in a business-oriented document. All these concepts, as well as many others, are addressed in the student textbook.

The activities are designed to lead you through a series of tasks to help you understand and apply the concepts developed in the textbook. You will build simple rollovers, measure graphic file sizes, and experiment with CMYK and RGB graphics. You will build web pages and desktop-published documents. You will explore the options to be found in PowerPoint. The activities will not replace a text devoted to a single piece of software. Instead, they will help you become familiar with the basic functions of a number of software applications and their potential use in the business world.

If you should decide to pursue a career focusing on one or more fields related to digital media, you should find that this course will provide a good foundation. You will have acquired both the concepts and the skills to make it easier for you to pursue an in-depth study of your area of interest.

How to Use This Book

There are a number of ways that these materials can be used in a classroom. One way to is teach a single chapter from the student text, then have students study one of the relevant software programs using the supporting documents. If you have only limited software, you might want to complete all chapters of a given unit and then move on to one of the software packages that you do have. The end-of-unit projects are designed to reinforce and integrate everything the student has learned; therefore, they should be completed after all have been studied.

Student Edition

The student text contains a number of features designed to meet your instructional needs. Each unit opens with a career cluster profile of an actual person engaged in multimedia work. Each chapter contains clear objectives. Within each chapter there are a series of lessons broken up by activities. There are also these special features: CheckPoint for discussion and critical thinking, 21st Century Skills, the Impact of the technology, Think About It critical thinking stimuli, and the History of the technology. Chapters contain callouts of the terms discussed within the body of the text. Each chapter concludes with Key Concepts, Review and Discuss questions, Apply (use your knowledge to apply skills activities), Explore (further exploration material to engage students in critical analysis), and Academic Connections (to tie topics from core curriculum courses). The end-of-unit projects include an independent project and a portfolio project that build through the course, and a Winning Edge activity to help prepare for student organization competitive events.

Resources

In addition to the textbook, the complete instructional program includes Cognero questions, an IRCD with lesson plans, PowerPoint presentations, teaching suggestions, printable grading checklists, and answers to review questions (9781305661769).

There are also available e-book versions of the text. A website (www.cengage.com/swep/digitalmedia4e) provides additional resources.

Digital Media also offers a MindTap personalized learning course. As an instructor using MindTap[®], you have at your fingertips the right content and unique set of tools created specifically for your course, in an interface designed to improve workflow and save time when planning lessons and course structure. The control to build and personalize your course is all yours, focusing on the most relevant material for your students. Stay connected and informed in your course through real-time student tracking that provides the opportunity to adjust the course as needed based on analytics of interactivity in the course. Find more information about MindTap at ngl.cengage.com/mindtap.

From the Authors

We are delighted that you are using our book. We have labored long and hard to make it interesting, complete, and useful. If we succeed in our goal of introducing students to the delight of digital media, our task will be complete.

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UNIT 1

Media and the Digital Age

1 Getting Started with Digital Media

2 Ethical and Legal Issues

Career Cluster: Web Content Provider

Interview with Laura, Production Editor at eMusic.com

Describe your average day. On most days, I edit music reviews and features, do lots of HTML coding, and post editorial content on the eMusic website. I also write reviews of albums and concerts and sometimes interview musicians. I work with the rest of the editorial team to plan upcoming features. I build marketing newsletters and use Twitter to promote features and communicate with our members.

What is the worst part of your job? In a nutshell, the music industry can be extremely complicated! What I can write about at eMusic is limited by what music we are selling, which isn't all music on every record label.

What is the best part of your job? I get to listen to and talk about music all day, so I'm constantly learning about new and old artists. I can write about and promote bands and musicians I care about, and it directly translates into them selling records and making money.

Employment Outlook In general, average employment growth is expected for writers and editors in the near future, with high competition for jobs, according to the U.S. Bureau of Labor Statistics. However, writers and editors who are knowledgeable about and comfortable working with electronic and digital media tools will have an advantage in the marketplace.

Skills and Qualifications A bachelor's degree or higher in an area such as journalism, communications, or English is sometimes preferred for writing and editing jobs, but good writers from any background can qualify for many positions. Creativity, self-motivation, and a strong sense of ethics in deciding what to publish are important personal attributes for writers and editors. A familiarity with electronic publishing, graphics, Web design, multimedia production, and social networking tools increases employability and is a must to work at a Web-based business.

Job Titles writer, editor, Web content provider, production editor

What About You? You may not have thought of writing as a digital media career, but with the increase in Internet-based businesses, the demand for content providers who are familiar with digital media tools has jumped. Use the Internet to find job postings for Web content writers and editors. Research writing and similar careers using the *Occupational Outlook Handbook* published by the U.S. Bureau of Labor Statistics and available at <http://www.bls.gov/ooh/>.

- What job qualifications are employers looking for?
- What are the most common technical skills and computer programs mentioned?
- How can you best prepare yourself for a career as a Web content provider?

Chapter 1

Getting Started with Digital Media

- Lesson 1.1** Learning the Keys to Success
- Lesson 1.2** Reviewing the Computer System and File Management
- Lesson 1.3** Maintaining Digital Safety
- Lesson 1.4** Practicing Workplace Safety

Welcome to the exciting world of **digital media** or, as it is sometimes called, **multimedia**. Digital media is about communicating electronically, but it also includes an element of creativity. The Digital Media Alliance of Florida (DMAF) perhaps says it best when it defines digital media as “the creative convergence of digital arts, science, technology and business for human expression, communication, social interaction and education.” This text will help you learn how to use digital media tools to communicate creatively.

Learning Outcomes

- ▶ **1.1** List the characteristics needed to become a skilled digital master.
- ▶ **1.2** Identify how to name and save a file.
- ▶ **1.3** Explain how to ensure digital security.
- ▶ **1.4** Practice the techniques for good keyboarding.

Key Terms

- adware
- cyber predator
- digital media
- encryption
- ergonomics
- hacker
- keylogger
- malware
- naming convention
- online backup
- phishing
- repetitive stress injury
- rootkit
- server
- social engineering
- spyware
- Trojan horse
- virus
- worm

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Lesson 1.1 Learning the Keys to Success

To be successful in the field of digital media requires that you do more than just get a degree. You must be prepared to learn continuously as well as to bring basic work skills to all that you do. Begin by committing yourself to success.

digital media—Any combination of audio, video, images, and text used to convey a message through technology.

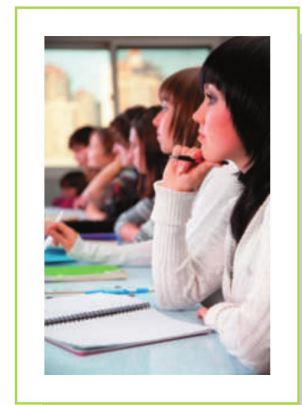
Commitment LO 1.1

Each year brings interesting changes and surprising additions to the world of digital media. The software you learn today will undoubtedly change dramatically within a few years, requiring you to update your skills and knowledge. In this class, you will learn about current software, but you will also learn *how* to learn. Education is an ongoing process in every field. In digital media, it is an essential skill if you are to remain productive in the field.

Learning new software and computer skills requires the following commitments from you:

- **Be flexible.** In this class, being flexible might mean that you accept that there may not be an exact solution to every assignment.
- **Keep an open mind.** Be willing to accept new ideas. For example, you may have always thought that the subject of every photograph should be in the center of the image. Be open to looking at images in a new way. Or, you may have thought that good software comes only from huge corporations. Become aware of the open source movement. Being closed minded makes it easy to get stuck in a digital rut. Work to avoid that.
- **Use initiative.** Using initiative in class can mean exploring possibilities other than just those given in a list of instructions. It might mean taking a project beyond just that assigned in the text. Learn to explore all the possibilities.
- **Listen and read attentively.** Listening to your instructor and reading the text carefully smooths the path to learning. Reading more than just the text and listening to those with expertise in the field of digital media opens your mind and turns you into an accomplished learner.
- **Seek to acquire new knowledge and skills.** Make a promise to yourself that you will continually seek new knowledge beyond that which is assigned to you. Be an active, engaged learner. Avoid the temptation to say you are finished learning. There is no “finished” in the world of digital media. Keeping current with industry software requires you to know how to learn. You will be seeking new knowledge on a daily basis.

If you keep these five statements in mind at all times, you will become, and remain, a skilled master of digital media technology.



iStockphoto.com/Perkus

Figure 1.1 *Listening attentively will allow you to become an accomplished learner as well as successful in your future career.*



Impact

Software Updates

Eighteen months is about the length of time a version of a software package remains current. The impact of this timeline on digital media experts is that they must be constantly learning new software to maintain their skills. As soon as you have mastered one version, a new one is on the horizon. Avoid the trap of getting too comfortable with today's technology. Anticipate these changes. Be at the forefront instead of the back by paying attention to changes ahead of you.

One way to stay current is to participate in beta trials, which are tests of new versions before their final release. Beta trials let you learn about the changes before they reach most consumers. They also allow you to participate in the process by making suggestions for changes and reporting problems.

Certifications **LO 1.1**

One of the ways to demonstrate your skills to potential employers is to acquire certification from a secondary or post-secondary school or through a provider such as Adobe® or Microsoft. Certification programs provide in-depth training within particular areas and then offer testing—the passing of which demonstrates your proficiency. While such programs cannot ensure employability, they do give you credentials that are quite valuable. It is one way for potential employers to know exactly what skills you possess.

Just as with other educational programs, the cost incurred depends upon the school or the certification program. But do not let cost deter you from obtaining the required certification. You should expect to invest in certification for yourself just as you would with a two- or four-year degree program. Note also that, just as with a four-year program, if you are enrolled in a community college, you may be eligible for grants and other financial assistance.

Digital media certifications generally fall into three categories: Web, print, and video. Graphics, animation, and 3D fall under these groupings. Colleges, universities, your local community and technical colleges, as well as online colleges can be a good place to get the training required for certification. These institutions set up a curriculum with a series of required courses you must take in order to receive a certificate. Certificates are generally broadly defined. For example, you may earn a certificate in Multimedia Studies.

Adobe certifications, called **ACA (Adobe Certified Associate)** and **ACE (Adobe Certified Expert)** certifications, are available online. The ACA credential certifies that you have the entry-level skills to plan, design, build, and maintain effective communications using different

forms of digital media. The ACE certifies that you have expert-level skills in the same areas. Adobe provides study materials as part of the testing process, but you must have the motivation to complete them on your own. Each ACE test is for a specific Adobe application, such as Adobe Dreamweaver® or Adobe Photoshop®. You can demonstrate proficiency for a single product to receive a specialist certificate or combine a series of products for master certification. Listed below are the different ACE master certification levels. Notice that the ability to use both Adobe Illustrator® and Adobe Photoshop are required for all three plans. This is because the ability to manage graphical images, as is done with these programs, is the foundation for working in all digital media.

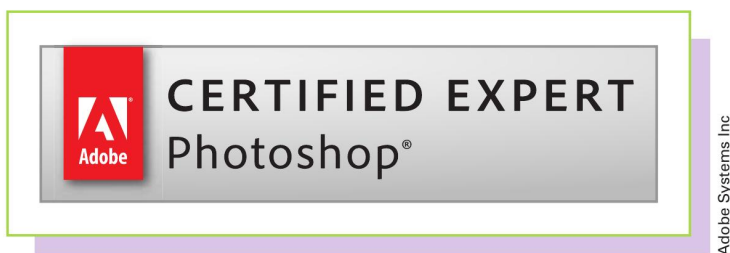


Figure 1.2 The ACE logo on your résumé is proof that you have the skills for which employers are looking.

Design Master

- Adobe Acrobat® Professional
- Adobe InDesign®
- Adobe Illustrator
- Adobe Photoshop

Web Master

- Adobe Acrobat Professional
- Adobe Dreamweaver
- Adobe Flash® Professional
- Adobe Illustrator
- Adobe Photoshop

Video Master

- Adobe AfterEffects®
- Adobe Flash Professional
- Adobe Illustrator
- Adobe Photoshop
- Adobe Premiere® Pro

Some schools use ACE exams as their final testing products. It is also possible that your school is a testing center for the ACA exam. Check with your instructor for more information on any certifications offered.

Work Skills for Multimedia Careers LO 1.1

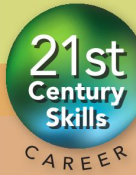
Beyond becoming skilled in the use of software and hardware, it is important to keep in mind other behaviors that contribute to your ability to acquire a job and grow in the field of your choice, whether it is in digital media or some other profession. These are the same behaviors that ensure success in school. They include the following:

- **Good attendance.** No matter how skilled you are, if you are not at school or at work, you cannot use those skills. Being absent has hindered the success of more students than poor ability.
- **Promptness.** Sliding into work or class late puts you behind before you can begin. Be on time. Plan ahead so no event can prevent you from being on time.
- **Proper attire.** Communication comes in many forms. Words are not the only way to send a message. What you wear can say more about your attitude and respect than you might expect. Choose your clothing so it says that you are a committed employee or student. Wear the clothing that fits the task. Revealing blouses, torn jeans, and sloppy shoes say that you do not consider your work to be important.
- **Clean and safe work environment.** Some jobs require you to keep your work area clean and safe, which usually includes keeping your work space clear of trash. In a digital world, a safe environment is one in which networks are not compromised by viruses and personal identities are not lost through careless passwords. A clean digital world includes maintaining good file structures and updated software. Regardless of your job, safety and cleanliness are essential.
- **Appropriate voice.** In some work environments, such as those that require employees to use the telephone or to talk to customers, appropriate voice means avoiding harsh words and inappropriate language. Electronic language has the same restrictions. Emails and text messages written in anger or carelessly can end the career of even the most talented. Electronic content that includes inappropriate language or topics can be just as damaging. In a world of digital social networks, that means monitoring all content to ensure that your voice is always appropriate.
- **Pride.** No matter what task you are assigned in school or at work, always perform it in such a way that you can feel pride in your accomplishment. That means caring about the most minor detail as well as the larger components. In digital media, for example, that pride shows when you crop an image carefully to remove the slightest imperfection. It shows when you verify the spelling of a simple one-line caption. It shows when you assign descriptions to Web images for use by the visually impaired. Pride means you care that your work is good. Pride shows.



Media Bakery13/Shutterstock.com

Figure 1.3 *The clothing you choose communicates a lot about your attitude toward yourself, others, and your work.*



Taking Initiative

Probably the best way you can advance your career is to take initiative at work. You should not stand around with nothing to do. If you complete an assignment, go to your supervisor and request something else to do. Do not wait to be given a new task—ask for more work and responsibility. Supervisors notice and respond favorably to employees who do so. One good way to take initiative at work is to find small ways to improve the way a job is done. Or consider doing a job in a slightly different way. Taking initiative on the job can be a bit tricky, though. Employers are not necessarily looking for workers to come in and start “running the show.” Taking initiative does not mean insisting that things be done your way. It means determining what your employer wants and needs and then doing it the best way possible.

Skills in Action: Think about ways you can take initiative in a classroom. Check with your instructor and follow through with at least one of them.

checkpoint

What are the keys to success in digital media?

ACTIVITY 1.1 ▶ Creating a “Commitment to Learning” Presentation

1. Using presentation software such as Microsoft PowerPoint, create a slide show with **Commitment to Learning** as the title and your name as the subtitle.
2. Create a slide for each of the five commitments to learning discussed in this lesson. For example, the first slide will have the title **Be Flexible**.
3. On each slide, add a bulleted list of three to five brief statements expanding on the commitment in the title. You may want to do some research to create the best statement on what this commitment means or how it can best be accomplished.
4. Save the presentation as **1_Activity1_commitment**.

Lesson 1.2 ▶ Reviewing the Computer System and File Management

Before moving on to the study of multimedia software, it is necessary to make sure you have a clear understanding of basic file management. While much of this material will be a review, it is easy for details, such as naming

conventions, to have been omitted from your previous instruction. This lesson makes sure that these gaps, wherever they might be, are filled in.

Managing Files **LO 1.2**

Managing digital media files is an essential part of creating a good work environment. Digital media projects often include multiple components as part of the final product. These may include image, text, audio, and video files. All must be saved in such a way and in such a place that anyone involved in the project can find the most current versions. Horror tales abound of products that appear finished until someone discovers that a wrong version of one of the component files has been used.

Naming Files

The first step in managing files is deciding on a naming practice, or **naming convention**. It is easy to assign a filename quickly, without much thought. However, that often means you cannot find the document in a maze of files when you look for it later. Choose a name that clearly identifies the contents of the file. If files are to be shared, the author's name or initials and some numbering method should be used to make sure that correct versions are apparent.

If a filename includes more than a single word, one of two formats is generally used to connect the words. One method links words with an underscore, as in `Book_revision.doc`. The other format links multiple words using upper and lower case, as in `BookRevision.doc`. While you can separate words with spaces in standard filenames, empty spaces are discouraged because they can lead to problems down the road. Avoiding blank spaces in filenames is especially important for files used in a web page because the linking process replaces empty spaces with “%20,” making the URL address appear confusing when it is cited or referenced. There are other characters that should also be avoided in file or directory names as shown in Table 1.1.

naming convention—A set of rules used in the naming of files and folders.

Table 1.1 Characters to avoid in file and directory names.

SYMBOLS			
#	%	&	?
\$!	@	{ or }
< or >	' or "	+ or =	:
`		/ or \	

Saving Files

The second consideration in managing files is making sure you have saved your file to the correct location. There should be a designated place to save project files, and everyone on a project team must

know where that is. Network locations or shared Internet locations are often used to allow everyone access to the same material. Make sure you know where the shared folder is located. If you are responsible for creating folders, make sure they are clearly identifiable. Develop the habit of saving files into folders so that similar documents or files that are all associated with the same project are gathered together.

Many programs, such as Adobe Photoshop, offer several file type options such as .jpg or .psd when you save a file. Make sure that you know what file type should be selected for your project. You will learn more about image file type choices in Chapter 3, but this is not just an image issue. It also applies to word processing, spreadsheet, and database files. In some programs, such as Microsoft Word, you can choose to save as a certain file type based on software version compatibility. For example, if you need to share a file with someone who does not have the most current version of the software you are using, you must be sure to save in a format that is readable in the earlier version.

Choosing Storage

A computer hard drive is the internal storage space for files on your computer. While a computer's hard drive is installed inside the machine, it is also possible to have external hard drives that are used to expand storage space. The size of hard drives has increased dramatically over the last few years even as the prices have dropped. In the past, a hard drive of 500 gigabytes (GB), or "gigs," would have been considered large. Today, drives are often measured in terabytes (TB). The next generation of drives will be measured in petabytes (PB). See Table 1.2 for descriptions of storage sizes. As the size of these drives increases and the cost drops, it becomes easy to ignore the size of files you store on your hard drive. However, video and audio files are so large that they can consume the space of even very large hard drives. It is important to pay attention to file sizes and understand what demands they are making on your system.

Table 1.2 A summary of storage descriptions.

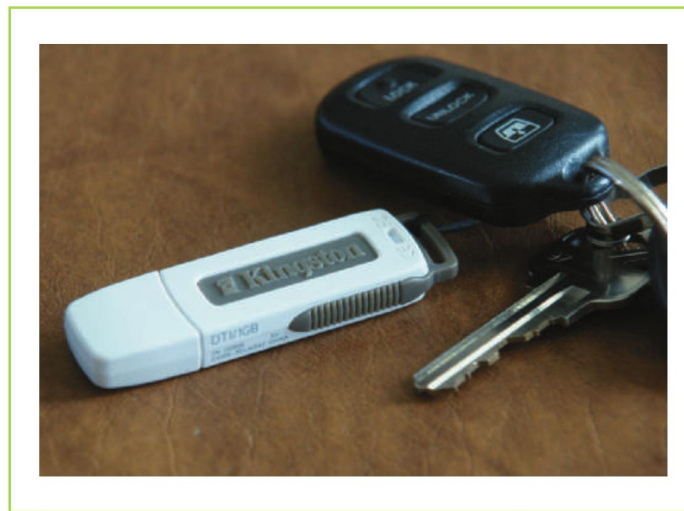
kilobyte	1000 (or 1024) bytes
megabyte	1000 (or 1024) kilobytes
gigabyte	1000 (or 1024) megabytes
terabyte	1000 (or 1024) gigabytes
petabyte	1000 (or 1024) terabytes

Organizations often store files on dedicated servers. A **server** is one or more large hard drives stored in a location separate from the desktop

server—A computer designed to store files from multiple computers.

computers used by employees. (For safety and security, this location is often a physically different address.) This hardware “serves” one or more computers on a network. Just as with a personal computer, you must be aware of the size of the digital media files you are storing on a server. While their storage capability is far greater than your computer’s hard drive, it is not unlimited.

Another means of storage can be a writeable CD or DVD. CDs can store about 700 MB while DVDs can store 4 to 15 GB, depending upon the method of recording. CDs and DVDs are useful as a means of archiving files that you want to store for retrieval on a later date. They are also used to share files with someone who does not have access to your computer or network. Because of their much larger capacity, DVDs are often used to store digital media files. While the disks appear to be permanent, the length of time you can trust the reliability of the data stored on them is a subject of discussion. Some reports have shown that the plastic used to create the disks begins to break down in as little as five years. Some of the reliability issues are based on the manufacturing process used. If you are archiving files that need to be stored for long periods of time, investigate different brands before you choose which one to use.



Susan Lake

Figure 1.4 *The flash drive has had many names since it was introduced. Originally it was known as a thumb or key chain drive, but as users became more familiar with the concept, the term flash drive became more widely used.*

Flash drives (also called thumb drives or USB drives) are not hard drives. Instead of a spinning platter on which data is stored, these small devices store information electronically on a circuit board. This means there are no moving parts to break. They are attached to a computer through the USB port, making them easy to use as a means of transferring data from one machine to another. Flash drives come in many sizes from a few hundred MBs to several GBs.



Granata111/Dreamstime.com

Storage Methods

The history of the personal computer (as compared to mainframe or business computers) can be tracked according to the different storage methods used at each point along the timeline. Early computers had no hard drives. All the data was originally stored on tape cassettes, but soon moved to “floppy” disks (so named because they were bendable). These disks had a paper covering and were 5.25 inches square. In time they were replaced with 3.5-inch floppy disks with a hard plastic covering. Each year brought changes in the storage capacity of these disks. Eventually a larger hard plastic “zip” disk with 10 times the storage came on the market, although floppy disks remained the primary means of transferring data.

During the time in which floppy disks of various sizes were being used, hard drives or hard disks were added to computers, dramatically increasing their storage ability.

CD-ROM (compact disks—read only memory) drives, which originally could only read information, were added to computers. In time these disks became writeable.

Disk storage has always served two purposes: to provide information to a computer and to store the information for archival or transfer purposes. The need to physically transfer files has nearly disappeared with the use of networks and email to send documents. Floppy disks have become obsolete, replaced by CDs and DVDs. We may see even these disappear as flash drives become larger and cheaper. And many people now store a great deal of information in the “cloud”—a network of servers that you can access from any location with an Internet connection. It will be interesting to see what the next point will be on the history timeline.

Making Backups LO 1.2

Digital media files represent hours of work. Losing this work through a hardware failure or virus attack is a concern to every designer. Backups can be made to hardware such as a flash drive or another hard drive. Backing up over a network means that the information is stored on another computer within the network. A third option is an **online backup**. With this process, files are transferred over the Internet to a computer in a distant location. All three of these methods may be used to ensure that files are not lost. Whatever method you choose, backing up or saving your work is another means of maintaining a good working environment.

Some organizations have systems in place that automatically back up files at a set interval. Others require you to save only when you believe it is appropriate. Whenever you are working on a project, whether for yourself or someone else, it is important to consider backups. Make sure you have a plan in place. Short-term, more frequent backups can be made to removable media such as a flash drive. Long-term backups may be sent to an online server.

online backup—A means of backing up or storing data using the Internet.