

Technology in the Classroom – Study Guide

Chapter 3: APPLICATION SOFTWARE PRODUCTIVITY TOOLS FOR EDUCATORS

OBJECTIVES

Students will have mastered the material in this chapter when they can:

- Explain the role of an operating system and list the main operating systems used on today's computers
- Define and describe a user interface and a graphical user interface
- Identify the important features of widely used software applications
- Describe the advantages of software suites
- Explain how to create documents
- Discuss why the use of special needs software is important for K-12 schools
- List and describe learning aids and support tools that help you use and learn software applications
- Explain how to work with different versions of software applications

CHAPTER OVERVIEW

In this chapter, students learn about operating systems, user interfaces, and several of the more widely used software applications. Various types of productivity software, graphics and multimedia software, software for school and professional use, and software for home and personal use are presented. They also read about some of the learning aids and support tools that are available for application software and how to work with different software versions and work with files on both Macintosh computers and PCs. Knowledge of these topics increases their computer literacy and helps students to understand how personal computers help them in their careers, in school, and at home.

STUDY GUIDE

The Operating System, 142

This section will outline the various computer operating systems. Review each operating system.

The Role of the Operating System, 142

Define **system software**.

Use Figure 3-1 to reflect on the relationship between a user, application software, system software, and computer hardware.

Define **operating system**.

Describe the role of the operating system. Many application programs are designed to run with a specific operating system. When shopping for an application software package, buyers must make sure they have a compatible operating system. That is, a software package designed to be used with the Macintosh operating system may not work with the Windows operating system. The Web Info has additional information on Windows.

Using Different Operating Systems, 142

This section will review the various operating systems running on most school and home computers.

Review each operating system.

Discuss the reasons why there might be several operating systems running in a single school. The first version of Windows (1985) imitated the GUI used by Apple's Macintosh computer. In fact, Apple sued Microsoft unsuccessfully for copyright infringement.

Describe Windows. Although some users still feel the Macintosh interface is superior, some form of

Windows is used on almost 90 percent of personal computers today. Because of the popularity of Windows, even competitive products often use similar features, such as the same menu names.

Microsoft Windows, 142

Explain **Microsoft Windows**.

Discuss the differences between **Windows 98**, **Windows 2000**, Millennium Edition (Me), Windows 2000 Professional, and **Windows XP**.

Use Figure 3-2 to show the new **Windows XP Media Center PC** desktop.

Define and discuss **Windows XP Tablet PC Edition**.

Macintosh Operating System or MAC OS, 143

Discuss the **Mac OS, version 9.1** and **Mac OS X**.

The Web Info has additional information on Mac OS.

Other Operating Systems, 143

Define and discuss **UNIX**, **Linux**, and **open source software**.

What if any, would be the benefits of using one of these operating systems?

Consider the FAQ: Can I simply turn the computer off when I am finished?

The Role of the User Interface, 144

Define **user interface** and **graphical user interface (GUI)**.

If possible, compare a graphical user interface to a text interface such as DOS. Think about which interface is easier to use and explain why. Studies comparing GUI users to text interface users have found that GUI users generally complete tasks more accurately, work faster, are more productive, and feel less fatigue.

Describe the evolution of the GUI.

The Macintosh operating system — the first popular GUI — actually was developed from an earlier GUI-based operating system created by Xerox.

Application Software, 144

Describe **application software** and **application program(s)**.

List the purposes for which application software, or application programs, can be used.

Use Figure 3-3 to characterize the five major categories of popular application software - the categories are not mutually exclusive.

Define **software package**. Notice the Web Info on application software packages.

ACTIVITIES

List specific software packages with which they are familiar and also determine the type of software each suggested package represents (i.e., word processing, spreadsheet, educational, and so on) and the category in which each package belongs.

Starting a Software Application, 145

Define **desktop**.

Use Figure 3-5 to compare and contrast the Mac OS desktop to the Windows desktop.

Define **icon**, **button**, **menu**, **commands**, **submenu**, **window**, and **title bar**. Use Figure 3-4 to illustrate how to start an application.

Notice the advantage of having common elements across most applications in Windows.

Working with Software Applications, 146

Define a **document** and explain why documents are not just word processing materials.

Define and describe **creating**, **editing**, and **formatting**. An axiom of business is that the higher up the corporate hierarchy a document is destined, the greater the effort that must be invested in formatting. If possible, compare a formatted document to an unformatted document. Which document has more impact? Why? Define **insert**, **delete**, **cut**, **copy**, **paste**, and **Clipboard**. Use Figure 3-6 to define headers, **font**, **font size**, **point**, **font style**, columns and alignment, tables and graphics, footers, and page numbers. Fonts generally are grouped into two categories: serif and sans serif. Serif fonts, such as Times New Roman or Garamond, have small finishing strokes on characters. Sans serif fonts, such as Arial or Century Gothic, have no finishing strokes. Font size generally stipulates the distance from the top of an ascender to the bottom of a descender. Therefore, 12 point font size is 12 points from the top of an h to the bottom of a p. Some European countries (France, Germany, and Italy) measure font size in Didot points, which are slightly larger than American points. Printers often use a unit called a pica, which is equal to twelve points or 1/6 of an inch, to determine the dimensions of lines, illustrations, and pages. Describe **bold**, *italic*, and underline.

Consider the Web Info on fonts.

Describe **saving** and **AutoSave**. Define **file** and **file name**. Restrictions on file names were once severe; file names could be no more than eight characters long, and many characters, including spaces, could not be used. Modern operating systems, however, have far fewer restrictions.

In Windows 98, a file name can have up to 255 characters, including spaces.

A Windows 98 file name *cannot* contain only nine characters: \ / : * ? " | < >.

Define **dialog box**.

Describe **printing** and use Figure 3-7 to describe the Print dialog box. In the Print dialog box, option buttons stipulate desired alternatives, check boxes turn specific capabilities on or off, text boxes allow text to be entered, and command buttons immediately perform an action, such as implementing (OK) or ignoring (Cancel) the choices made in a dialog box. Consider the FAQ? Will a document print as it looks on the screen?

Voice Recognition, 148

Define **voice recognition** and **speech recognition**.

Note Taking Software, 148

Define **note taking software**.

Discuss the advantages of converting handwritten comments to typed text or saving it in a handwritten format.

Note Taking Software as a Digital Tool for Digital Kids, 148

Use Figures 3-8 and 3-9 to discuss the various uses for note taking software.

Productivity Software, 150

Define **productivity software**.

REFLECTION TOPICS

What additional applications might be used a decade from now?

Several years ago, a survey of large businesses showed that the most often used applications were:

- word processing and spreadsheet (used by 100 percent of those surveyed)
- communications, electronic mail, database, and presentation graphics (used by about 95 percent)
- desktop publishing (used by about 85 percent)
- project management (used by about 70 percent)

- personal information management (used by about 50 percent)

Word Processing Software, 150

Define and describe **word processing software** and explain why it is the most widely used application software. Refer to Figure 3-10.

Describe popular word processors.

Today, most word processing software has a capability known as WYSIWYG (what you see is what you get) that allows users to see on the screen (using the Print Preview command) exactly how a document will look when printed.

Most word processors can display more than one page or enlarge a single page in print preview. List and define some of the word processing features used in formatting, editing, and creating documents: **borders**, **clip art**, and **clip art collections** (Figure 3-11), **import**, **margins**, **wordwrap**, **scrolling**, **find or search**, **replace**, and **spelling checker** (also called **spell checker**). Spelling checkers as shown in Figure 3-12 should be used with discretion. Overzealous use of a spelling checker in a *Wall Street Journal* article caused the name Clyde Leff to appear as “Cloyed Elf”. Even a spelling checker cannot ensure that all words in a document will be spelled correctly. As an extreme example, the sentence, “I here ewe deer, but I am busy write now” would go unnoticed.

Use Figures 3-13 to describe the advantages of using a wizard, template, or assistant.

Review other word processing features described in Figure 3-14.

Often grammar checkers offer explanations and suggestions. Some grammar checkers allow users to employ different standards for different types of composition, such as business writing or casual writing.

Use Web Infos for information on Microsoft Works, clip art and spelling bees.

Define **header**, **footer**, **wizard**, and **assistant**.

REFLECTION TOPIC

Do spelling checkers, thesauruses, and grammar checkers eliminate the need to learn spelling, vocabulary, and grammatical rules? Why or why not?

List the activities involved in producing a document using word processing.

What effect, if any, word processors have on the creative process.

Are people using word processing software more willing to adopt a “stream-of-consciousness” style, knowing that whatever they write can be changed easily? For many writers, the editing capabilities of word processing software have altered and improved the creative process. The freedom to express yourself without reservation, knowing you easily can revise what you have written, can improve the quality of written work.

“There is a difference between a book of two hundred pages from the very beginning, and a book of two hundred pages which is the result of an original eight hundred pages. The six hundred are there. Only you don’t see them.” (Elie Wiesel, U.S. writer)

Spreadsheet Software, 153

Characterize and define **spreadsheet software**.

Use Figure 3-15 to illustrate a **spreadsheet** or **worksheet**.

The basic spreadsheet concept of double-entry bookkeeping was originated by Pacioli in 1494. The first spreadsheet software, VisiCalc, was introduced in 1979. Describe a spreadsheet file. Tell how columns and rows are identified.

Define **cell** and explain how cells are named. List the three types of data that cells may contain. Define **label**. Define **value**, **formula**, and **function**.

Define **chart**. Use Figure 3-16 to describe line charts, column charts (or bar charts), and pie charts.

Mention some of the word processing features that also can be found in spreadsheet packages.

Use the Web Info for more information on Appleworks.

REFLECTION TOPICS

Is formatting as important to a spreadsheet as it is to a word processing document. Why or why not?

Database Software, 155

Although most spreadsheet packages can manage data tables of a few thousand records, database software can handle much larger data tables efficiently.

Define **database**.

Describe **database software** and popular programs used in education.

Use Figure 3-17 to describe how a database is similar to a manual system.

Define **database file, record, and field**.

Use Figures 3-18 through 3-20 to explain the development of a database file using Microsoft Works.

To reinforce the concepts of record and field, think of what records and fields you would use for a class database.

Use an Access database wizards and template.

Use the Web Info to give an example of how athletes use a database.

Consider the FAQ: How big is the largest database?

Presentation Graphics Software, 157

Word processing and spreadsheet software were introduced around 1980.

Presentation graphics software was not launched until the mid- to late 1980s.

Nevertheless, it can be argued that presentation graphics software has had almost as great an impact on education and business and on how people operate in the workplace as either of the older applications.

Define and describe **presentation graphics software and presentations**.

Define **slides**.

Use Figure 3-21 to illustrate slides generated by presentation graphics software and how slides can be projected on a screen, printed, or made into transparencies.

Define **clip art/image gallery**.

Presentations can be enhanced with automatic timing or special effects. Use Figure 3-22 to describe a **slide sorter**. The miniature slides commonly are called “thumbnails”.

Notice word processing features that are available in presentation graphics software.

Explain why presentation graphics programs are important for education and how they can be used to present information in a nonlinear format.

Use Figure 3-23 to show how electronic slide presentations are an exciting alternative to traditional lectures.

Use Figure 3-24 to show how electronic slide presentations are powerful teaching and learning tools as they can include hyperlinks to almost unlimited sources of information.

Use the Web Info to give tips for effectively using graphics in a presentation.

Consider the FAQ: Is PowerPoint hard for young students to use?

Personal Information Managers, 161

Describe and define a **personal information manager (PIM)**. Discuss Figure 3-25.

Characterize an **appointment calendar, address book, and notepad**. What are other PIM capabilities?

Refer to Figure 3-26 when defining **synchronize**.

Define **beaming**.

PIMs essentially are “free style” database managers. They have become very popular with people who spend much of their time in business travel. Consider FAQ: Are PDAs also called Pocket PCs?

PDA Software, 163

Describe the additional software available for PDAs.

Use Figures 3-27 and 3-28 to discuss resellers of PDA software along with Web sites for downloading shareware and freeware programs.

Use Figure 3-29 to discuss Education software available for PDA's.
Use the Web Info for updated links to PDA software sites.

Software Suites and Integrated Software, 164

Define **software suite**.

Discuss Figure 3-30.

List the applications typically included in a software suite.

Define **integrated software**, **Microsoft Works**, and **AppleWorks** and discuss Figure 3-31.

Present the two major advantages of a software suite or integrated software package.

Use catalogs or advertisements to compare the cost of applications purchased individually to the cost of the same applications purchased as part of a software suite or integrated software package.

REFLECTION TOPIC

when DOES it make sense to buy a software suite or integrated software package.

When would it be wiser to purchase applications separately?

Which packages are used more in education and on home computers?

Which are used on PCs and Macintosh computers?

Graphics and Multimedia Software, 165

Identify occupations that often work with graphics and multimedia software.

Identify types of graphics and multimedia software and popular software products.

Desktop Publishing Software, 165

Despite their advanced features, the design capabilities of word processing software are exceeded by the capabilities of desktop publishing software.

Define and describe **desktop publishing (DTP) software**.

Notice how word processing software is different from DTP.

Define **page layout** (sometimes called page makeup).

Explain how text and graphics used in DTP can be created or imported.

Notice the capabilities of DTP.

List documents that personal DTP software can be used to produce.

Explain how DTP is used to create documents.

Use Figure 3-32 to highlight popular DTP programs used in education.

Consider the FAQ: Why can I not open some files on the Web including brochures, applications, education articles, and reports?

REFLECTION TOPICS

Compare the impact of DTP to the introduction of moveable type in the fifteenth century.

Gutenberg's invention democratized reading by making books available to the public.

Has DTP (and word processing) software had a similar effect, democratizing writing by making it possible for anyone to produce professional-looking documents at a relatively low cost?

Paint/Image Editing Software, 166

Use Figure 3-33 to define and describe **paint software** and **image-editing software**.

Define **photo editing software**.

Paint software and image editing software have had a tremendous impact on commercial art.

Commercial artists praise the capabilities offered by these applications.

At the same time, many feel clients are demanding more, both in terms of time (requiring work to be produced more quickly) and expectations (insisting more often on changes, because work is altered easily). As a result, some commercial artists believe their income (i.e., pay for hours worked), has dropped

because of graphic software. The professional impact of paint/image editing software on the people who use it, and on the quality of the work produced, could be an interesting discussion topic.

Video and Audio Editing Software, 167

Define and discuss **video**.

Use Figure 3-34 to discuss how video editing software can be used to modify video images.

Clip Art / Image Gallery, 167

Define clip art/image gallery.

Discuss Figure 3-35. Tell how clip art/image galleries are obtained and used.

Multimedia Authoring Software, 167

Define **multimedia authoring software**.

Describe **HyperStudio**.

Various multimedia authoring packages are described in Chapter 5.

Notice how multimedia presentations usually are stored and delivered. You should be familiar with multimedia games on CD-ROM as well as presentations on DVD-ROM.

Web Page Authoring Software, 168

Define **Web page authoring software**.

Use Figure 3-36 and Figure 3-38 to explain how many applications such as **Adobe GoLive**, **Macromedia Dreamweaver MX**, **Microsoft FrontPage**, and **Netscape Composer** can be used to create Web pages.

Use Figure 3-37 to describe a **curriculum page** and why curriculum pages are popular in education.

Discuss the Special Feature, Creating a Teacher's Web Page that follows this chapter.

It provides step-by-step instructions for using Microsoft Word to create a web page.

The Web Info has tips on using Macromedia Dreamweaver.

Software for School Use, 168

List examples of software designed for school and professional use by educators.

Explain why networking has increased dramatically the use of school and student management software.

School and Student Management Software, 170

Define both **school management software** and **student management software**.

Use Figure 3-39 to describe how a school district's wide area network can be used to manage a district's operations and track important records on teachers, staff, and students.

Grade Book Software, 170

Define **grade book software** programs and explain how they are used in education.

Explain how grade book programs can be integrated with other school and student management programs.

Explain why the use of grade book programs varies widely among schools.

Use Figure 3-40 to show how easy it is to create a grade book using Microsoft Excel.

List some popular grade book programs.

Use the Web Info for more information on grade book programs.

Educational and Reference Software, 170

Define **educational software**.

Describe various examples of educational software.

Explain that examples of educational software will be highlighted in Chapters 5 through 8.

Define **reference software**.

Discuss Figure 3-41.

Reference software articles often include links that, when clicked, display related articles. Because referenced material can change frequently, some reference software packages can be updated via the World Wide Web.

Consider the FAQ: Are Microsoft Encarta, Britannica Reference Suite, and other popular reference software programs available on CD and DVD?

Special Needs Software, 172

Define **special needs software**.

Explain the types of software seen in Figure 3-42.

Define **speech synthesis software** and explain how it is used in schools.

Describe software used for students with visual impairments.

Additional software programs will be covered in Chapter 5 and special input and output devices will be covered in Chapter 4.

Point out that the Integration Corner at the end of the chapter includes a section on Special Education with many valuable links.

Use the Web Info for more information about a popular and free text-to-speech software program.

Software for Home and Personal Use, 172

List examples of software designed for home and personal use by educators.

Many of these programs are relatively inexpensive.

Personal Finance Software, 172

Define **personal finance software**.

Discuss Figure 3-43.

List the capabilities of personal finance software. Some personal finance packages also can prepare reports on income and expenses, budget, net worth, taxes, and investments. Personal finance software wizards or automated assistants can help to balance accounts, prepare budgets, plan mortgages, calculate savings, and arrange retirements.

Define and discuss **online banking**.

Point out the online services offered by many personal finance software packages.

Consider the FAQ: How many people bank online?

Tax Preparation Software, 173

Describe **tax preparation software**.

Discuss Figure 3-44.

Explain why tax preparation software has become so popular and why it is so easy to use.

Most programs allow users to file their taxes electronically.

Legal Software, 174

Describe **legal software**.

Discuss Figure 3-45.

Legal software is designed to facilitate creation of standard documents. Unusual circumstances might still demand the services of a lawyer.

REFLECTION TOPIC

when DO YOU think the cost of legal software would be justified?

Entertainment Software, 174

Define **entertainment software**.

Try to describe the various programs that you have on their home computers and who uses them.

Learning Aids and Support Tools, 174

List the resources available to help application software users.

Using Help, 174

Use Figure 3-46 to describe online **Help**.

Explain how to access online Help.

Function key F1 often is used to activate the Help feature.

In many applications, an audible “beep” indicates an error, and the last entry should be reviewed.

Define **context-sensitive**.

Some applications have a Help button that, when clicked, changes the mouse pointer to a Help arrow.

This arrow can be used to obtain help on a command, button, or bar by pointing at the item and clicking.

Many software developers have eliminated user manuals in favor of extensive online Help.

How do you feel about this trend?

Other Learning Resources, 175

Trade books, which detail the features of an application, are available for many software packages.

Although computer stores carry some trade books, entire aisles of computer-related books can be found in most large bookstores as shown in Figure 3-47.

Define **FAQ (frequently asked questions)**.

Describe the FAQs available on many companies' Web pages.

Define **tutorials**.

As the cost of traditional manuals increases and the price of CD-ROMs decreases, multimedia tutorials are increasingly common.

Software Versions and Upgrades, 175

Define **version** and **upgrade** and how these terms are related to the various application software programs described in this chapter.

Explain why some manufacturers use calendar years to designate the latest version.

Explain why some programs have different versions for use on Macintosh computers and PCs.

Using Different Software Versions, 176

Explain why most schools cannot upgrade their software every time a new version is released. It is important that you understand how to work with different software versions.

Use Figure 3-48 to explain how a person can determine which version he/she are using. Describe in detail the two general rules for working with different versions of the same software. Explain how to save files in different versions using Figure 3-49. The operating system version also is important. An application designed for Windows XP may not work with Windows 98. Yet, because most operating systems are downward compatible, software written for earlier versions of an operating system (such as Windows 98) usually can be used with recent versions of the operating system (such as Windows XP).

Working with Macintosh Computers and PCs, 176

Some educators will use both Macintosh computers and PCs on a daily basis.

Explain how Macintosh computers and PCs format disks differently and the problems users experience using files on both platforms.

Use Figure 3-50 to show how to save files for use on the other platform.

Creating a Teacher's Web Page, 177

By completing this step-by-step project, you will master most of the basics needed to create a teacher's Web page using Microsoft Word. You also will learn how to download image files from the Web.

The image files for this project are located at www.scsite.com/tdc4/sf3.htm.

Chapter Summary of Application Software Production Tools for Educators, 177

Many of the software applications covered in this chapter will be described further or used as examples for technology integration in later chapters. This is a good time to review briefly what is included in the next chapter. That technology integration is the important concept covered in the textbook. Review the Special Feature that follows this chapter.

In Brief, 178

This section provides a general survey of the material in the chapter. You can use these pages to reinforce your achievement of the chapter objectives.

Key Terms, 180

You should use these terms to prepare for tests and quizzes.

Checkpoint, 181

These exercises review key terms and concepts presented in the chapter. Complete the Label the Figure, Matching, and Short Answer exercises.

Teaching Today, 182

These questions challenge you to use the Web to explore areas of interest to all teachers.

Education Issues, 183

These questions challenge you to think about issues related to using computers in education.

Integration Corner, 184

Use this section to help teachers find ideas and resources for integrating technology into their specific curriculum area.

This section is organized into 10 content-specific corners.

Software Corner, 185

Use this section to discuss a wide variety of software available for teacher and student use.

Digital Media Corner, 186

Use this section to discuss a wide variety of digital media available for teacher and student use.

Assistive Technologies Corner, 187

Use this section to discuss a wide variety of assistive technologies available for teacher and student use.

In the Lab, 188

Try these great activities with their own classes and discuss the results.

Learn It Online, 191

Complete selected labs. Use your browsers and a given URL (Uniform Resource Locator) to visit Web pages that offer more information on topics presented in the chapter.