Basic Computer Skills
Module 2

Software Concepts
# Basic Computer Skills Module 2

## Software Basics

<table>
<thead>
<tr>
<th>Summary</th>
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<tr>
<td><strong>Goal:</strong> Know the fundamentals of operating systems.</td>
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**SMART Objectives:**

*Specific, Measurable, Achievable, Realistic, and Time-sensitive*

By the end of this module, students should be able to:

- **BCS 2.1:** Identify the fundamental principles of operating systems.
- **BCS 2.2:** Understand the basic functions of the Windows 7 operating system.

**Instructor:**

- Computer Instructor

**Delivery Methods:**

- Hands-on lab
- Lecture
- Group Work

**Length:**

- Two Topics
- Total of 4-6 hours

**Any Applicable Business and/or Soft Skills?**

**Corresponding NLS Lesson #?**

**Take Away Message(s):**

Knowing the fundamental principles of operating systems will enable transcribers-in-training to maximize the use of operating systems and demonstrate basic diagnostic procedures and troubleshooting techniques necessary to perform preventive maintenance on desktops, laptops and portable devices.
Instructor Preparation

Title of Module:  *Software Concepts*

The intent of this module is to provide students with a basic understanding of the software involved in operating a computer.

The following are potential introductory remarks as well as relevant context or background information that may be useful for the instructor.

This module was written to explain the Windows 7 operating system to students. The instructor should be aware that some students may use other operating systems such as Windows XP or Mac OS when they purchase their own systems. Whenever possible, point out to students the similarities/improvements made between Windows XP and Windows 7. If possible, it may be a good idea to expose students to information about the latest Mac OS (iOS 5 at the time of this writing).

Technology is ever evolving. Thus, certain topics/information in this module may change or become obsolete during the course of instruction. It is a good idea for the instructor to review all content for accuracy and relevance, and to be prepared to present updated information if necessary.

Agenda – *topics to be covered in the module and length of each item*

<table>
<thead>
<tr>
<th>Topic: Software Basics</th>
<th>Time Allotted: 4-6 hours</th>
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<tbody>
<tr>
<td>A. Operating Systems</td>
<td>(2-3 hours)</td>
</tr>
<tr>
<td>B. Introduction to Windows 7</td>
<td>(2-3 hours)</td>
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</table>

Materials & Supplies – *items needed in order to carry out the agenda and classroom activities*

1. Introduction to Windows 7 (2.A.4) video
2. Computer using Windows 7 operating system
3. A good selection of computer catalogs that include information on software and a variety of operating systems.
4. A screen and projector
5. Handouts for activities:

Topic A – Operating Systems

Operating Systems PowerPoint (2.A.1)
Operating Systems Layers Sheet (2.A.2)
Compare Operating Systems Sheet (2.A.3)

Classroom Preparation – *steps to follow when setting up the learning environment*

1. Have a projector and screen available to share the Windows 7 video with students.
A. Operating Systems

Objective BCS 2.1: Identify the fundamental principles of operating systems.

**PREINSTRUCTIONAL ACTIVITIES**

Discuss the objectives for this module. Explain that this lesson will provide a better understanding of different types of operating systems most commonly found in computers.

Lead the students in a discussion of their knowledge and/or experience with different operating systems. Ask students open-ended questions that will facilitate discussion, such as:

- Can you state the purpose and functions of an operating system?
- What are some of the most popular systems used in desktop and notebook computers today?
- Which operating systems are popular for portable devices?

**CONTENT PRESENTATION AND LEARNER PARTICIPATION**

Identify and discuss the vocabulary used in this module. Explain to students that they will be viewing a slideshow and video to help them better understand the vocabulary.

- Operating system
- Windows menu
- Microsoft Windows
- Directory/Folder
- Explorer
- Control panel
- Task bar
- System tray
- Firewall
- Security

Open and project the Operating Systems PowerPoint (2.A.1). Use the presentation to give a basic overview of the most popular types of operating systems and their basic functions.
Next read through the Operating System Layers sheet (2.A.2) to help them understand the five basic layers of an operating system – the kernel, memory management, input/output, file management, and user interface.

**ASSESSMENT**

Remind students of the most popular operating systems – Windows, Linux, and Apple. Then, have students compare versions of 3 common operating systems – Windows Vista, Windows 7, and Mac OS X using the Compare Operating Systems sheet (2.A.3).

### B. Introduction to Windows 7 (2-3 hours)

Objective BCS 2.2: Understand the basic functions of Windows 7 operating system.

**PREINSTRUCTIONAL ACTIVITIES**

Discuss the objectives for this module. Explain that this lesson will provide a better understanding of Windows 7, the newest operating system from Microsoft.

Lead the students in a discussion of their knowledge and/or experience with previous versions of Microsoft Windows – NT, Vista, and XP.

**CONTENT PRESENTATION AND LEARNER PARTICIPATION**

Explain that Windows 7 is the newest release from Microsoft, and is similar to Vista. According to Microsoft, Windows 7 has been designed to make production of documents easier for users.

You may also want to mention that Microsoft is currently developing Windows 8, and that more information will be available soon.

Show the video Introduction to Windows 7 (2.A.4).

Explain to students that Windows 7 comes in several versions, each with specific characteristics to match the end users. Each student should fold a sheet of (8 1/2 x 11) paper into 4 sections and head the paper Windows 7 Versions. They should label as follows:
<table>
<thead>
<tr>
<th>FEATURES</th>
<th>Home Premium</th>
<th>Professional</th>
<th>Ultimate</th>
</tr>
</thead>
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**ASSESSMENT**

Distribute the computing catalogs to students and have them find information about each version of Windows 7 to complete the chart. When they are done, have students brainstorm scenarios in which one version may work better than another for consumers.
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Software Concepts Handouts
Operating Systems PowerPoint Handout

The Basics
- Operating systems (OS) can help computer users do many things, like managing and manipulating files and folders.
- Operating systems also provide users the ability to control hardware components of a computer and its peripheral devices, like printers and scanners.

Types of OS
- Windows
  - Used on the majority of personal computers
  - Manufactured by Microsoft.
  - Popular versions are Windows 7, Windows Vista, and Windows XP.
- Apple
  - Macintosh (Mac) made by Apple – used on Apple notebooks and desktops.
  - iPhone OS used for portable devices – iPhone, iPod Touch, and iPad.
Types of OS (cont.)

- **Unix**
  - Older OS used on many servers

- **Linux**
  - Acts like Unix; has open source code – individuals have access to code and have ability to further develop this OS.
  - Several distributions available as a free or inexpensive download – popular among inexpensive computers.

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File Management

- The Windows Explorer utility in Microsoft Windows operating systems easily allows users to manage files and folders using functions such as create, modify, copy, move, and delete.

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File Management

- To open Windows Explorer, click Start, point to All Programs, point to Accessories, and then click Windows Explorer.

- Windows Explorer can also be opened several other ways, including alternate (right) clicking on the Start menu and choosing Explore (Open Windows Explorer).
Control Panel

- The Control Panel allows users to view and manipulate basic system settings and controls via applets (simple computer programs), such as:
  - adding hardware,
  - adding and removing software,
  - controlling user accounts, and
  - changing accessibility options.

Final Thoughts

- Be sure to familiarize yourself with different versions of operating systems and their manufacturers.
- It is important to understand which operating system will be the most efficient and cost effective when configuring a computer.
Operating System Layers – BCS 2.A.2


Operating systems are broken down into five layers.

Layer 1: The Kernel--the bottom most layer

The kernel is the heart of the operating system. Among its responsibilities are ensuring that each running process is given a fair amount of time to execute while also controlling the amount of resources each process can use. The kernel is the essential center of a computer operating system - the core that provides basic services for all other parts of the operating system. Read more: http://wiki.answers.com/Q/What_is_the_kernel_of_an_operating_system#ixzz1Vt5bMjooa

Layer 2: Memory Management- act of managing computer memory

The name of this layer gives you a good idea what it is all about. It is the responsibility of this layer to share the computers physical memory among the processes which want to use it. It also has to manage such situations where there may not be enough physical memory to share out.

Layer 3: Input/Output

On this layer, all the physical communication is between the computer’s hardware. When you first turn on the PC, the microprocessor (the CPU) needs to begin executing instructions to various components on the PC, and dealing with data that is stored on the hard drive. This exchange of data into the CPU and out of the CPU is called Basic I/O (Input Output), and the information on how to do this is stored on a small ROM chip mounted on the motherboard, which contains the instructions known as the BIOS - Basic Input Output System.

Layer 4: File Management
Again, the name of this layer may give you a clue as to what it does. It is the job of this layer to control how the files on your computer’s hard drive are stored and accessed by any application seeking to use them.

File Management

Basic terminology:
File – an individual unit such as a Word document, PowerPoint slideshow, etc.
Extension – This refers to the period and three letter ending computer programs assign to files.
   Word = .doc
   PowerPoint = .ppt
   Excel = .xls
   Access = .mdb
   Dreamweaver = .html
Folder – A computer storage device that can contain many files of various types
Drive (or hard drive) – This refers to the storage area on a computer where files, folder, programs, etc. are saved. Most drives are referred to by a letter followed by a colon. C: refers to the hard drive on the computer you are logged in to while H: refers to your storage space on a computer in the media center.
Address – the actual location of any particular file or folder.
Path – the sequence of locations a computer accesses as it opens a file or folder. For example, a file called example.doc saved in an H: drive would have the following path:
H:\example.doc
If we put the same file inside a folder called Word Processing, the path becomes:
H:\Word Processing\example.doc
Windows Explorer – This is the program used to manage files and folders. You can access this utility through the student programs menu or by typing \Windows Explorer on the keyboard.

Layer 5: The User Interface.

The last element or layer as we have been calling them, of an operating system is the User Interface. This layer is probably the easiest of all to understand since it is the first thing you see when your operating system has logged you in. It is the job of this layer to provide a means for the user to actually interact with the rest of the layers and as such the system as a whole.

Keep in mind there are two different types of User interfaces. The first one is probably the one you are most familiar with, the graphical user interface, which is where you see windows and icons for each of your files and so on.

The second is a command line interface, or text based interface where a user would interact with the system using text based commands.

2.A.2
Topic A – Operating Systems

Compare Operating Systems – BCS 2.A.3

Comparing and Contrast Popular Operating Systems

**Directions** You are going to use various computer catalogs to create a table comparing 3 of the most popular operating systems. Keep in mind there are many others available!

<table>
<thead>
<tr>
<th>Name</th>
<th>Creator</th>
<th>Latest Version</th>
<th>Latest Release Date (Year)</th>
<th>Cost/Availability</th>
<th>Price</th>
<th>Target System Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows Vista</td>
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<tr>
<td>Windows 7</td>
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<tr>
<td>Mac OS</td>
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