

Assistive Technology – How to Make it Work for You



www.ncvital.info

North Carolina Vocational Instructors Training in Accessible Learning

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This guide covers several useful assistive technology skills, several skills related to assistive technology, and several skills that just plain useful to students.

This guide covers the following:

Windows Accessibility Tools	3
Making a personal settings floppy disk using the Accessibility Wizard	3
Configuring a left-handed mouse	4
Using a Flash Drive	4
Key to Access Device	5
Using Kurzweil to convert text to a portable audio file (.mp3)	5
Burning a CD Using Nero v6.3.0.2	6
Setting Up a Free Yahoo E-Mail Account	6
Keyboard shortcuts and mouse methods	7
Data Loss Prevention	7
Free Anti-Spyware and Anti-Virus Software	8
Computer Related Terminology	8
Speech-to-Text Software	9
Text Readers	10
Notes	15

Windows Accessibility Tools

Users may use these tools to change the display settings on a Windows PC to allow for easier viewing. They may increase the size of fonts used, change the color combinations used on the screen and may change the contrast of the screen. Users may also activate the **Magnifier** program to enlarge portions of the screen. (In Windows click **Start – Programs – Accessories – Accessibility – Magnifier.**)

Microsoft Windows has several built-in features that may benefit the user who has difficulty using a mouse and/or standard keyboard with default settings:

Filter keys – May be used to slow the repeat rate of the keyboard or make Windows ignore repeated or brief key presses. This should allow users with unsteady hands to type more accurately. Default shortcut: Hold the **Shift** key for more than 8 seconds. This will bring up the **Filter keys** dialog box. Clicking **Settings** will access the **Accessibility Options**. Here **Filter keys** and the rest of the keyboard related options can be configured.)

Sticky keys – Allows user to use the **Shift**, **Alt** and **Ctrl** keys one at a time. By default the user would press the desired key twice to lock the key. Default shortcut: press the **Shift** key 5 times.

Toggle keys – Allows the user to hear a tone when the **Caps Lock**, **Num Lock**, or the **Scroll Lock** keys are pressed. Default shortcut: Hold the **Num Lock** key for 5 seconds.

Mouse keys – Allows the user to control the mouse pointer using the numeric keypad on the keyboard. Default shortcut: **Left Alt + Left Shift + Num Lock** keys.

An **On-screen Keyboard** is also available. This feature allows a user to “type” by using the mouse pointer to click on the keys of a keyboard displayed on the screen. Activate by clicking **Start -> Programs -> Accessories -> Accessibility ->**

On-screen Keyboard.

Another feature of the **Accessibility Tools** is the **Accessibility Wizard** covered in the next section.

Making a personal settings floppy disk using the Accessibility Wizard

The **Accessibility Wizard** guides you through the process of customizing your computer with tools designed to help meet your vision, hearing, or mobility needs. Accessibility options (such as [StickyKeys](#), [ShowSounds](#), and [Mousekeys](#)) help users with disabilities to make full use of the computer. Some of the options, such as **MouseKeys**, may be of interest to all users. Once the Accessibility tools are set up, they can be accessed through **Control Panel** and the **Accessibility** menu.

Open the [Accessibility Wizard](#) by clicking **Start**, point to **Programs**, point to **Accessories**, point to **Accessibility**, and then click **Accessibility Wizard**. Create a default setup file by making a change

to a setting and then changing it back to what it was. Click “**Next**” until asked to save the personal setting file. Browse to an appropriate location to store the default settings file (usually a floppy disk or a flash drive) and save the file with the name “Default”. (This file can be used to change revert the computer back to its original settings as a courtesy to the next user.)

Re-enter the **Accesibility Wizard** and make necessary adjustments to each setting before clicking “**Next**” to go to the next setting. Once again, click “**Next**” until asked to save the personal setting file. Browse to an appropriate location to store the default settings file (usually a floppy disk or a flash drive) and save the file with the name “**My Settings**”.

The disk may be used by inserting it in a computer, double-clicking the “**My Computer**” icon, and double-clicking the “**3½ Floppy**” icon. Double-click the “**My Settings**” file to configure the computer to the new settings. Double-click the “**Default**” file to set the computer back to the old settings.

(Press **F1** on the keyboard and search for **Accessibility Wizard** or see <http://www.microsoft.com/enable/products/windowsxp/default.aspx> for more details.)

Configuring a left-handed mouse

To reverse your mouse buttons:

1. Open **Mouse** in **Control Panel**.
2. Open the mouse settings by clicking **Start**, then point to **Settings**, click **Control Panel**, and then double-click **Mouse**.
3. On the **Buttons** tab, under **Button configuration**, select the **Switch primary and secondary buttons** check box to make the right button the primary mouse button. Clear the check box if you want the left button to be the primary mouse button.

Note: If the mouse buttons were switched using the left mouse button, they will have to be switched back using the right mouse button.

Using a Flash Drive

Flash drives (also known as thumb drives or pen drives) are data storage devices, like floppy disks, and come in different memory sizes ranging from 32 MB (Megabytes) up to 4 GB (Gigabytes). A typical size is 128 MB. A flash drive of this size has the storage capacity of about 88 floppy disks.

The flash drive can be accessed by plugging it into the USB port on a PC (a green arrow on a small box should appear in the system tray on the bottom-right of the screen within 15 or 20 seconds) then opening the File Explorer (right-click “Start” button then click “Explore”) or by double-clicking the “My Computer” icon. The flash drive should be listed as either “Removable drive” (for Windows 2000) or listed by its brand name (for example, “Lexar Media” for Jumpdrives on Windows XP).

(Note: do not confuse the flash “Removable drive” with the Zip disk “Removable drive” installed on some computers.) Files can be saved to or opened from the drive the same way they can be on or from a floppy. Some units even have a write-protect switch.

When finished using the drive, be sure to click on the green arrow in the System Tray (bottom-right of the screen) then click “Safely remove USB mass storage device” (Windows XP) or “Stop USB device” (Windows 2000). **WARNING: Failure to do this may result in loss of data.** The drive may be removed after the computer displays that it is safe to remove hardware.

Key to Access

Key to Access is a combination MP3 player and flash drive. As a flash drive, it can store data files (such as Word documents, spread sheets, MP3 music files, etc.) and programs. It comes with eight different assistive programs: Scan and Read Pro, Universal Reader Plus, E-Text Reader, Ultimate Talking Dictionary, Talking Word Processor, PDF Magic, Text To Audio, Talking Calculator. This device allows the user to use its software by clicking on an icon on a tool bar that pops up after plugging the device into the USB port on a PC. This frees the user from having to use a specific computer with assistive software.

Key to Access (MSRP \$349.95)

Premier Assistive Technology

<http://www.premier-programming.com/keytoAccess/Key.htm>

Using Kurzweil to convert text to a portable audio file (.mp3)

Kurzweil (see “Text Readers” below) reads text that is scanned in and can also save the reading as an audio file. A user can then play the audio file on any PC with Window Media Player or any other compatible player.

Use the following steps to create the audio file:

1. Scan the text into **Kurzweil**
2. On the menu click “**File**”, “**Audio Files**”, then “**Create Audio File...**”
3. On the settings box that pops up select (use the default settings if you are not sure):
 - a. how much of the document you want converted to an audio file
 - b. the type of voice and reading speed
 - c. the Output File:
 - i. Format
 - ii. Quality
 - iii. and File Name
4. Click “**OK**”

The file will be saved by default in:

C:\Documents and Settings\All Users\Application Data\KESI\Output Audio\.

The file can then be copied to a flash drive, burned to a CD, or uploaded to an MP3 player.

Burning a CD Using Nero v 6.3.0.2

Need to burn .mp3 files created with Kurzweil to a CD? Here's how:

Start Nero.

Click the **CD** tab for burning a CD.

Click the Data icon (it looks like a sheet of paper).

Click "**Make Data Disk**".

When the "**Disk Content**" window pops up:

Click the "**Add**" button.

Browse to and select the files to be burned and click the "**Add**" button.

When done adding files, click then "**Finished**" button.

Click the "**Next**" button.

When the "**Final Burn Settings**" window appears:

Select the "**Current recorder:**" (This is usually the D: or E: drive.)

Optional: Name the disc in the "**Disc name:**" text box.

Check the box beside "**Verify data on disc after burning**".

Click "**Burn**".

The disc will be burned, then the disc tray will eject and retract for the verification process.

A message box should appear stating the number of times buffer underrun was avoided. Click the "**OK**" button.

A message box should appear stating "**Burn process completed successfully at 48x (7,200 KB/s).**" (The numbers will be different with a faster or slower burn speed.) Click the "**OK**" button.

A window should appear asking:

"What do you want to do now?"

Burn same project again

Cover Designer

Save project"

Click the "**Exit**" button to return to the main screen.

Click the power button (red button with a 1 inside a 0) to quit Nero.

Setting Up a Free Yahoo E-Mail Account

1. Start Internet Explorer and go to **www.yahoo.com**.
 2. Click the **Mail** icon near the top of the page.
 3. Click the "**Sign Up**" link.
 4. Fill out all information fields with an * beside them.
 5. Read the code in the "**Verify Your Registration**" section and enter the code in the box beside "*** Enter the code shown:**"
 6. Read the "**Terms of Service**". If acceptable, click the "**I agree**" button.
 7. Correct any errors in the form. When corrected click "**Submit**".
 8. Registration is complete. Continue to the newly created account.
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Windows Keyboard shortcuts and mouse methods

<F1>	Help
<Shift + arrow key>	Select text
<Control + a>	Select all text
<Control + c>	Copy text
<Control + v>	Paste text
<Control + x>	Cut text
<Tab key>	Move cursor to next field or box
<Control + Right arrow>	Move a word at a time to the right
<Control + Left arrow>	Move a word at a time to the left
<Page Up>	Move up one page or screen
<Page Down>	Move down one page or screen
<Home>	Move to the beginning of the line
<End>	Move to the end of the line
<Print scrn>	Capture a picture of the whole screen to the clip board.
<Alt + Print scrn>	Capture a picture of the currently active window
<Alt-F4>	Close a window

Menus may be opened by pressing <Alt> + the underlined letter in the menu name.
For example: <Alt + f> opens the File menu.

Use scroll bars more effectively by:

grabbing the slider and moving it to the desired location
or

clicking above or below the slider to scroll the screen one-page in time.

These methods are much quicker than using the up or down arrows at the top and bottom of the scroll bar.

Data Loss Prevention

- Save a copy important work on a backup disk or disks.
 - Self E-mail copies of work.
 - Print out important work. (Text can be scanned into a PC and converted back into editable text using **OCR** software.
 - Never eject a floppy disk or Zip disk while the drive light is on.
 - Never remove a flash drive without first stopping the drive.
(See “Use a Flash Drive” above.)
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Free Anti-Spyware and Anti-Virus Software

Computer viruses can damage or destroy files on a computer. Ad-ware, software that installs pop-up ads along with invisible snooping programs, usually doesn't hurt data but can slow down a computer to the point of the computer becoming unusable.

Free Virus Scanner

AVG from <http://www.grisoft.com>

Free AdWare Scanners

SpyBot – Search and Destroy from

<http://www.safer-networking.org/en/index.html>

AdAware from <http://www.lavasoftusa.com/software/adaware/>

Computer Related Terminology

OCR – Optical Character Recognition software. Converts scanned text into e-text.

e-text – Electronic text, such as a Word document.

Install – to put software on a computer's hard drive so that it may be run on the computer.

Copy – to duplicate a file, usually to a different storage medium (from a floppy to a computer's hard drive).

Move – to transfer a file from one location to another. The file is deleted from the old location.

Download – to retrieve a file from a remote computer. (Downloading is NOT copying a file from a floppy to a computer or installing a program.)

Upload – to send a file to a remote computer.

Burn a CD – to record data to a CD-R (a recordable CD)

Boot – to start a computer from a powered off state. (Also known as a “cold boot”.)

Reboot – to restart a computer without turning it off. (Also known as a “warm boot”.)

Start/Launch/Run/Execute a program – to make a program go, usually by double-clicking its icon.

LCD – Liquid Crystal Display (NOT an LCD Display.)

NIC – Network Interface Card (NOT a NIC Card)

Ethernet cable – the cable that plugs into a computer's NIC and runs the network socket on the wall. (It looks like a thick phone cable.)

Speech-to-Text Software

Speech-to-Text Software allows users to speak into a microphone attached to a PC and have their speech converted into text. This is useful for people with reading or learning disabilities or limited manual dexterity. With this software the user can:

- Create a document
- Edit text and
- Issue commands.

The user must first go through a 20-minute training session in which the user reads selected text to the **Speech-to-Text Software**. This training allows the software to adjust to the user's speech patterns and accent. Additional training may be required if the software's accuracy needs to be improved.

Several things affect the accuracy of the software: microphone quality, microphone positioning, speech pattern and ambient noise. A high quality microphone ensures that an undistorted sound signal gets to the software. (Noise-cancellation microphones are even better.) The microphone should be positioned below or beside the mouth away from the main flow of air from the mouth to prevent the hiss of air against the microphone. The user should speak in a normal, flowing voice. Speaking in a broken, start/stop pattern prevents the software from properly adapting to the user's voice. Finally, training should occur in the environment that the software will be used in. This allows the software to adapt to and ignore the environment's ambient noise.

Speech Recognition Tool (included in later versions of Windows)

Microsoft

Install and configure:

<http://support.microsoft.com/default.aspx?scid=kb;en-us;Q306537>

Dragon Naturally Speaking Standard (MSRP \$99.99)

Dragon Naturally Speaking Preferred (MSRP \$199.99)

Nuance

<http://www.nuance.com/naturallyspeaking/>

Dragon Naturally Speaking 8 Video Guide (\$149.95)

Solutions for Humans

<http://www.sforh.com/speech/dragon-guide.html>

Via Voice Personal Edition (MSRP \$29.99)

Via Voice Standard Edition (MSRP \$49.99)

Via Voice Advanced Edition (MSRP \$79.99)

IBM

<http://www.nuance.com/viavoice/>

Feature Matrix

<http://www.nuance.com/viavoice/matrix/>

Text readers

A text reader is a program that converts the text shown on a computer display into audible speech through a computer's speakers. People that may benefit by using screen readers include people with learning disabilities, people with low or no vision, and people learning English as second language. Screen reading software allows a person to be independent of a human reader.

Kurzweil 3000

Kurzweil 3000 Professional Color (MSRP \$1495)

Kurzweil Educational Systems

<http://www.kurzweiledu.com/>

Summary

Kurzweil 3000 Professional Color allows the user to scan any text into the computer and then have the text read aloud by the computer using a synthesized voice. The user may also use **Kurzweil** to read text or Word files and may even use it to read web pages.

Using

When **Kurzweil** is started, users have the option of selecting an existing account or creating a new account. These accounts store the users' custom settings. (New users will probably want to create a new account.)

Most users will only want to use the basic functionality of **Kurzweil 3000**. This involves placing printed text (book, magazine, handout, etc.) in the scanner and pressing **Kurzweil's Scan** button (Picture of Scanner in the tool bar). Text can be placed in the scanner upside down with no problem as **Kurzweil** will automatically turn the scanned text right-side-up.

The user may scan in and read one-page a time, which may be inconvenient when reading multi-page documents. Clicking on the Scan menu and selecting **Scan Repeatedly** will cause a Message Box to pop up showing a 10 second countdown until the next scan and a button that labeled **Done**. This 10 second delay allows enough time for the user to position the text in the scanner. The text will be scanned, then a Message Box with the 10 second countdown will pop up again. When the last page is scanned the user may click the **Done** button in the Message Box to stop scanning.

Once the page or pages are scanned in, the user may press **Kurzweil's Read** button (Green triangle in the tool bar) to have scanned text read aloud. The user may adjust the read speed with the **up** and **down** arrows (to the left of the box labeled "WPM") to select the read rate in **words per minute**. The user may also adjust the size of the displayed page with the text size adjust arrows next to the box labeled "**Zoom**".

Some users may not like the default voice used by **Kurzweil**; it sounds very mechanical and robotic. Users may change the voice used by Kurzweil by a clicking on the **TOOLS** menu then clicking **Options**. Click the **Reading** tab and in the **Speaker** section select the desired voice from the **Speaker** pull-down menu. Press the **Test Speech** button to hear the selected voice.

Normally Kurzweil will read columns of text in the same way that newspapers and magazine articles are read. Occasionally it will be necessary to override reading columns, such as when trying to read a list of words on the left side with the definitions of the words on the right side of the page. The user can change the way in which **Kurzweil** reads the text by changing the reading zones with **Tools** menu -- > **Edit Zones**. The user may then delete the old zones and add the desired new zone or zones by dragging a box around the desired text. When done editing the new zones the user will exit zone editing with **Tools** menu -- > **Edit Zones**.

Dictionary, Syllables and Spelling

Use the **Dictionary**, **Syllable**, and **Spelling** features by double-clicking on the desired word (the word will be highlighted), and then clicking on the appropriate button. A window will pop up showing the word and its definition, syllables or spelling. Pressing the **Read** button will cause the word and definition, syllables or spelling to be read.

Testing

Students will occasionally need to use **Kurzweil** to take a test. If the test involves definitions, it may be necessary to turn off **Kurzweil**'s dictionary. To do this, click on the **Tools** menu, select **Options**, and click on the **Lock Features** tab. Under the section labeled **Reference Tools**, make sure that the option called **Dictionary Enabled** is unchecked. If the test involves synonyms make sure the **Synonyms Enabled** checkbox is unchecked. Check of the **Password-protected Features** checkbox and enter a password. This feature requires that anyone attempting to change any locked features to enter the appropriate password.

Highlighting

Just as highlighters may be used to mark important passages in a regular book, the same function may be performed in **Kurzweil** with the **Highlighter** tools. The **Highlighter** tools, when active, shows up in the tool bar as green and yellow high lighters. If the **Highlighter** tools are not visible, activate the highlighters by right-clicking on an empty space on the toolbar, going down to **Apply Toolbar Set** and selecting **Content Reading**. (This should be option 2.) The highlighted text may be saved to a file by clicking **File**, then **Extract, Highlights**. A window with only the highlighted text will pop up. Click **File** – **Save As** then pick a folder then a file name to save the extracted text.

Problems

Text with Colored Background

The contrast level between text and colored background sometimes is too low for **Kurzweil** to accurately recognize the text. To compensate for this, turn on the dynamic threshold option. To do this click the **Tools** menu, go to **Options**, and select the **Scanning** tab. The section in the lower half the window, called **Extras**, contains an option called **Dynamic Threshold**. Make sure this option is checked.

Highlighted Text

Text that has been highlighted may not be visible to the scanner. The highlighted areas may show up as black with the text being obscured by the highlighting. Highlighter colors known to cause this problem are pink, and sometimes green and blue. Most text highlighted in yellow is readable by the scanner.

Improper Document Placement on Scanner

If the book is placed in the scanner and the page to be scanned is not completely flat on the scan bed, the text near the spine of the book may not get scanned properly. Apply gentle pressure to the spine of the book to make sure the entire page is flat on the scan bed. **** Warning! Too much pressure may damage the scanner. ****

If the page adjacent to the one being scanned from a book is on the scan bed, some of the text on that page may be scanned. To eliminate this unwanted text, position the book so that the adjacent page is not on the scan bed or temporarily tape a blank sheet of paper to the scan bed so that only the desired page is seen by the scanner.

Kurzweil 3000 LearnStation (MSRP \$395)

Kurzweil Educational Systems
<http://www.kurzweiledu.com/>

Kurzweil 3000 LearnStation has the same reading capability of the **Professional Color** version but can not perform the scan function; it only reads text already in electronic format, such as **.doc**, **.rtf** and **.txt** files. Users may use a scanner to scan text into the computer and then use optical character recognition (OCR) software, such as **OmiPage Pro** or **Abby Fine Reader** to convert the scanned text into editable and readable text. (Most scanners come with some form of OCR software.) The user should save the converted text file and then open the file in Kurzweil for reading. (**File** menu, **Open**, then browse to the desired file.)

Kurzweil 3000 LearnStation is available in a network edition.

Scan and Read Pro (MSRP \$149.95)

By Premier Assistive Technology

http://www.premier-programming.com/snrp/SNR_PRO.htm

(Tutorial videos are available at the above link. Look on the right-hand side of the page.)

The basic operation **Scan and Read Pro** is the same as that of **Kurzweil 3000 Read Station**; the user places the desired text in the scanner, presses the **Scan** button (picture of a scanner) in the toolbar and after the text is scanned presses the **Read** button (mouth) to have the scanned text read aloud. **Scan and Read Pro** does not have some of **Kurzweil 3000 Scan Station's** advanced features such as highlighting.

When using **Scan and Read Pro** for the first time it may be necessary to select the scanner used by the computer. Do this by clicking the **Scan** menu, clicking the **Select Scanner** option and selecting the attach scanner from the displayed list.

Users may change the default voice used by **Scan and Read Pro** right clicking on the **Voice** button (picture of microphone) and selecting the desired voice. The user may also adjust the reading speed by sliding the **Voice Rate** slider to the right to increase the reading speed and to the left to decrease the speed. The pitch of the voice may be adjusted by using the **Voice Pitch** slider.

(**Scan and Read Pro** is included on the **Key to Access** device. See above.)

ReadPlease (Free version available for download)

By ReadPlease

<http://www.readplease.com/>

ReadPlease, much like **Kurzweil 3000 LearnStation**, does not scan text into the computer. **ReadPlease** only reads text already in electronic form. It is up to the user to scan and convert any hard copy text.

In order to read e-text, the user can open the e-text with **ReadPlease**. Clicking the **Play** button (green triangle on the left-hand side of the window) will cause **ReadPlease** to read the e-text. E-text may then be selected by highlighting, copied, and then pasted into the text region of **ReadPlease** for reading. **ReadPlease** has variable reading speed controls and an option for low vision color.

ReadPlease Plus 2003 (MSRP \$59.00)

By ReadPlease

<http://www.readplease.com/>

ReadPlease Plus 2003 has all the features of **ReadPlease®** plus several additional features such as text highlighting while reading and the ability to add custom words and pronunciations.

Microsoft Narrator (Included with Windows 2000 and XP)

Microsoft <http://www.microsoft.com/enable/training/windowsxp/usingnarrator.aspx>

Microsoft **Narrator** is a basic screen reader mainly designed to work with the Windows operating system and some of its programs, such as **Notepad**, **WordPad**, **Internet Explorer** and the **Windows Desktop**. It may not work accurately with third-party (non-Microsoft) programs therefore the user may want to obtain specialized screen reading software.

Narrator may be started by pressing the **Windows logo key + U**. (On keyboards without a **Windows logo key**, use **Ctrl + Esc + U**.) It may also be started by clicking **Start**, pointing to **Programs, Accessories, Accessibility**, and then selecting **Narrator**.

The **Narrator** voice may be adjusted by clicking on the **Voice** button in the **Narrator** dialog box, or by pressing the **V** key on the keyboard, and then clicking on the left or right arrows to increase or decrease the **Speed**, **Volume** and **Pitch** to the desired setting. The user may select **Speed** from the keyboard by pressing **Alt + T**, the **Volume** by clicking **Alt + O**, or the **Pitch** by clicking **Alt + P**. Once selected the setting may be adjusted with the up and down arrows on the keyboard.

Narrator may be turned off by clicking the **Exit** button in the **Narrator dialog box** and then clicking **Yes**.
