



# Getting Started

Apple Technology for Diverse Learners

An essential teaching and learning resource  
written by Apple Distinguished Educators





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*Special thanks to the following educators for their contributions to this guide: Mary Male, Ph.D., Professor Emerita, Special Education, San Jose State University, San Jose, CA; Dianna Williamson, Instructional Technology Curriculum Mentor, Los Gatos Union School District, Los Gatos, CA; and Robert E.M. Craven, Coordinator, Educational Technology, Orange County, CA.*

# Foreword



Take a moment to think about the learning styles of your students, as individual as their fingerprints. Years of conclusive brain research confirm that each learner's profile of learning strengths and challenges is different. Imagine a learning tool that could use students' learning strengths and provide scaffolds for their learning weaknesses, that actually builds their learning capacity over time. Apple has made that tool a reality for today's learners.

Apple provides innovative technologies that conform to students' unique learning profiles and that help them learn efficiently and effectively. This technology is included with all Mac computers, continuing Apple's commitment to providing tools to empower the individual and make technology accessible for everyone.

Mac OS X (the Mac operating system) was designed with all users in mind, including those with special needs, and offers a rich set of built-in accessibility features that can be customized for each student. This means that students can all use the same computers, without some students being required to use a specific computer to address their accessibility needs.

When all students in a classroom are given the same materials, assignments, and tests, some students are able to excel (but may not be close to being really challenged), some students may complete the work but fail to find any useful connections to their own lives, and some students may fail, not because they are incapable or because they don't try, but because their brains process information differently. With Mac OS X and the powerful suite of applications that are included on every Mac, students experience the power and freedom to access the curriculum, collaborate with peers, and express their unique understanding with the digital tools that best meet their needs.

At its simplest, a "universal design for learning" provides a wider variety of options for learning, just as "universal design for architecture" provides options for more people to cross the street without the obstacles of curbs, or enter buildings without using stairs or opening heavy doors. Our experience with universal design for architecture (initially created to assist people with physical disabilities) was to open up a world of convenience and ease for all of us.

Technology tools hold the same promise for engagement and success in learning environments. This *Getting Started* guide is designed to help you customize learning experiences so that each student gets just the right amount of support based on his or her needs.

You can use this *Getting Started* guide to experience the universal design for learning features, applications, and tools built into every Mac to help you create a classroom where every student can select the tools to best support his or her learning profile.

You'll learn how to set up and personalize a Mac—for yourself and the learners in your world. You'll develop an appreciation for the built-in software applications that open the doors to the world of learning and reduce barriers to achievement. You'll even explore options for engaging students in hands-on learning projects with the iLife suite of digital media tools. These tools help students create their own understanding of concepts through creative digital projects—movies, music, photo books, podcasts, web pages, and more. You'll read profiles of some types of students who use Mac computers to address their learning needs in the same classroom—without needing a label or being singled out as “different.” Just as everyone can see the benefits of a curb cut to get around, you'll be able to see the benefit of universal design for learning—the Mac way!

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# Setting Up and Personalizing a Mac for Diverse Learner Needs

Apple's operating system, Mac OS X, provides a uniquely accessible experience that enables all students to use and share the same technology regardless of language or abilities.

Each Mac is designed to provide students with multiple and flexible ways to access content for learning, allowing each student to use their unique learning style. Mac OS X features, such as VoiceOver, text-to-speech synthesis, and keyboard navigation options, are known collectively as Universal Access. They are designed to work in combination to provide smooth, elegant access for students with learning differences. On a Mac, these features are built in, easy to locate, and can be adapted to meet each user's requirements. This chapter explains these tools and how you can get started using them to address varied students' needs. The Universal Access features are located in System Preferences.

## **To set Universal Access and other preferences:**

- 1 Choose Apple menu (🍏) > System Preferences (or click the System Preferences icon in the Dock).
- 2 Click the icon for the preference you want to change.

## Setting Up Individual User Accounts on a Computer

With Mac OS X, you can create individual user accounts with unique preferences to support diverse learner needs. Because Mac OS X supports multiple users, each user can save his or her preferred settings without affecting other users.

### **To create a new user:**

- 1 Open System Preferences, then click Accounts.
- 2 If some settings are dimmed, click the lock icon and type an administrator name and password.
- 3 Click Add (+) and follow the onscreen help information.

The Parental Controls options allow you to restrict students' full access to the hard disk and Mac OS X applications. You can set these options by clicking Parental Controls in System Preferences or by clicking Accounts in System Preferences and then selecting the name of the user.

With Parental Controls, you can help keep students on task and prevent them from accidentally or purposefully modifying their environment. Features that can be managed using Parental Controls include:

- Changing preferences settings
- Removing items from the Dock
- Changing passwords
- Using certain installed applications
- Visiting unauthorized websites
- Receiving email from or chatting with unspecified users
- Accessing the computer during specified hours or for a specific amount of time

The System pane in Parental Controls allows you to designate the Simple Finder setup for a user. When you set up Simple Finder, students will have a simplified view of the desktop, with limited menus and commands in the menu bar and three folders in the Dock: My Applications, Documents, and Shared. With Simple Finder, users cannot create new folders or add icons to the Dock. You may want to use the Simple Finder setup for beginning computer users or users with varying cognitive abilities.

**To set up Simple Finder for a user:**

- 1 In the Accounts pane of System Preferences, click the user name, then select Enable Parental Controls.
- 2 Click Open Parental Controls, then click System if the System pane is not already displayed.
- 3 In the System pane, select Use Simple Finder.
- 4 Select the applications and utilities that you want the user to be able to access.

To enable users to quickly switch between various users on the same computer, you will want to turn on the "fast user switching" option in the Accounts pane of System Preferences.

**To turn on fast user switching:**

- 1 In the Accounts pane of System Preferences, click the user name, then click Login Options.
- 2 Select "Enable fast user switching." Click OK in the dialog that appears.

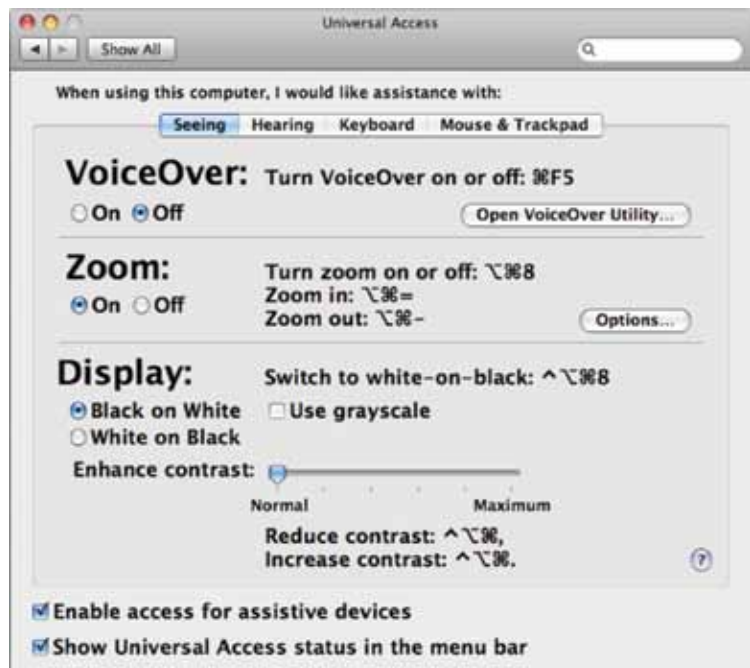
A new menu appears on the right of the menu bar at the top of the desktop that allows individuals to quickly and easily switch between accounts. Depending on the settings you selected for each user, some users may need to enter a password before logging in, while others will see a Simple Finder. Each user's desktop will reflect the individual preferences you've specified for that user.

Once a student account is set up, you can help the students organize their files and folders in the way that works best for them, taking advantage of the flexibility offered by Mac OS X. For example, files can be displayed as icons or in lists, and can be stored in folders within folders for different subjects or projects, all within the user's Documents folder. If students lose track of a file, they can use the Spotlight feature, the Mac OS X search technology, to find it right away.

## Customizing Settings for Visual Needs

Whether they are researching, using the Internet, reviewing notes, or creating presentations, students with visual disabilities will appreciate the power of Universal Access features in Mac OS X. This section describes some of these technologies:

- VoiceOver: For hearing descriptions of onscreen elements and documents with support for Braille displays and eight languages with add-on voice synthesizers
- Zoom: For magnifying the screen up to 20x
- Cursor Scaling: For increasing the size of the onscreen pointer
- View Options: For changing the way files, folders, and other elements are displayed
- Display Adjustment: For changing contrast, colors, and screen resolution
- Keyboard Shortcuts: For controlling the computer with keyboard shortcuts
- Speech Recognition: For controlling the computer through voice



## Promoting Collaboration with VoiceOver

VoiceOver is a fully integrated, built-in screen reader technology that provides access to the Macintosh through speech, audible cues, and keyboard navigation. It includes an advanced synthesized English voice, Braille support, and extensive keyboard capabilities. Also, VoiceOver can be used with eight languages. Mac OS X provides an accessible experience for students who need to hear descriptions of all the activities taking place on the computer and for those who use refreshable Braille displays. For students who want activities spoken to them, Apple uses an advanced synthesized voice called Alex to deliver natural breathing and intonation, even at fast speaking rates. VoiceOver also reads aloud the contents of files, including web pages, email messages, and word-processing files.

With VoiceOver, students use the keyboard instead of the mouse to navigate the computer's onscreen elements, such as the Dock, menus, and window toolbars. A Caption panel with white text on a black background displays the text of what is being read aloud. The Braille panel shows a visual representation of VoiceOver Braille output along with an English text translation.

Low-sighted students might want to take advantage of the ability to dim all objects onscreen except for the Caption panel and the pointer, called the VoiceOver cursor. VoiceOver includes a spoken menu, also displayed with onscreen text, that provides information about the available commands. VoiceOver, with its combination of speech, onscreen text, and Braille support, is designed to promote collaboration among students—nonsighted students can work side by side with sighted students with no artificial barriers.

If you have a keyboard with a numeric keypad, you can use the NumPad Commander to control VoiceOver.

### To get started with VoiceOver:

- 1 Press Command-F5 to turn VoiceOver on.
- 2 Press Control-Option-F7 to have the VoiceOver menu appear in the middle of the screen. Nonsighted users can navigate the computer elements by hearing the options read to them from the menu and then making selections. Press Return to select a menu item or Escape to close the menu without choosing an item.
- 3 Press Command-F5 again to turn VoiceOver off. VoiceOver can also be turned on and off from within the Seeing pane in the Universal Access preferences in System Preferences.

**To customize VoiceOver settings:**

- 1 In System Preferences, click Universal Access, then click Seeing.
- 2 Click Open VoiceOver Utility.
- 3 Make selections for Verbosity, Speech, Navigation, Web, Sound, Visuals (to display or hide the Caption and Braille panels and the cursor), NumPad, and Braille (settings for Braille display).

Settings can also be changed by pressing Control-Option-F8.

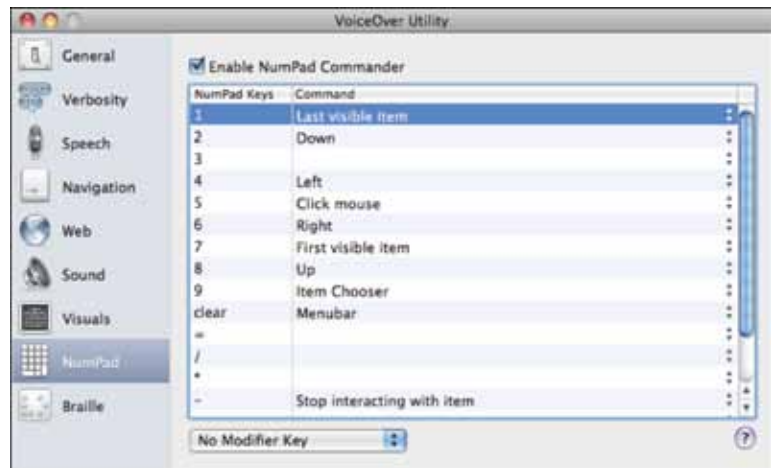
**To use VoiceOver with a Braille display:**

- If you have a Braille display that VoiceOver supports, simply connect it to your Mac and turn on VoiceOver.

Your display is detected immediately and begins to display output.

**To use your numeric keypad to control VoiceOver:**

- 1 Click Open VoiceOver Utility and select NumPad in the category table. The NumPad pane shows the commands you can use with the numeric keypad.
- 2 Select the Enable NumPad Commander checkbox.
- 3 Press the corresponding key on the numeric keypad to issue any of the commands listed in VoiceOver Utility.



The NumPad can be customized for each user. Each key on the keypad can be programmed with a different VoiceOver command, so that each command is available with a single keystroke.

## Magnifying the Computer Screen

You and your students will appreciate the power of Mac OS X Zoom. With Zoom, you can make the image on the computer screen larger so that onscreen elements are easier to see and read. Magnified, the screen moves continuously and automatically to follow the motion of the onscreen pointer.

You may want to use Zoom for your presentations or instructions to zero in on key points and to address the needs of students with low vision. Zoom may also help some learners who have difficulty focusing in on a part of the screen when there are many other items on the screen at the same time.

### To use Zoom:

- 1 Press Command-Option-8 to turn Zoom on or off.
- 2 Press Command-Option-equal (=) to make the screen image appear larger (zoom in).
- 3 Press Command-Option-hyphen (-) to make it appear smaller (zoom out).

You can also use Zoom by holding down the Control key while dragging with two fingers on a trackpad, or by scrolling the mouse ball on a Mighty Mouse while holding down the Control key.

Zoom can also be turned on and off from within the Seeing pane in the Universal Access preferences in System Preferences.

## Scaling the Cursor

If students have difficulty seeing or following the onscreen cursor, you can increase its size so it's easier to find and follow when they move the mouse. You do this by setting Mouse or Mouse & Trackpad options in the Universal Access pane of System Preferences.

### To use the scalable cursor:

- 1 In System Preferences, click Universal Access, then click Mouse or Mouse & Trackpad. (The exact name varies depending on whether you are using a desktop or notebook computer.)
- 2 Drag the Cursor Size slider to adjust the cursor size.

## Adjusting View Options

You can change the way applications, folders, documents, and other items appear in Finder windows. For example, you can choose to have students view items in a Finder window as icons, in a list, in columns, or in Cover Flow. You can also change the size of the icons and the icon text. You can magnify the icons in the Dock. With these options, you can assist students to organize the files on the computer in a way that works best for them. For example, they can use the Cover Flow view to display the first page of every document instead of a list of filenames. They can then use Quick Look to speedily view the contents of files without needing to open them first.

### To change the way icons appear on the desktop:

- 1 Click the desktop (the background on the screen).
- 2 Choose View > Show View Options, then make selections, such as to make icons larger or to increase the size of their text labels.

### To magnify the icons in the Dock:

- Choose Apple menu () > Dock > Turn Magnification On.

## Adjusting Display Options

If students have difficulty seeing objects on the computer screen, you can adjust the resolution of the screen to show images larger or smaller. You can also choose different screen contrasts to make the screen easier to view for them. You can invert the colors displayed on the screen, making white and light colors dark and dark colors light. Some students find it easier to read white text on a dark background than black text on a white background. With these options, you can set up the computer's display in the way that works best for individual students.

### To adjust the resolution of the screen:

- In System Preferences, click Displays, then select a new resolution from the Resolutions list.

### To enhance screen contrast:

- 1 In System Preferences, click Universal Access, then click Seeing.
- 2 To remove colors from the screen, select "Use grayscale."
- 3 To make the computer screen appear as photonegative (with white text on a black background), select White on Black.
- 4 Drag the "Enhance contrast" slider to the right to increase the contrast.

## Navigating with Keyboard Shortcuts

In addition to the keyboard navigation available with VoiceOver, Mac OS X allows you to turn on and off and change keyboard shortcuts to access the menu bar, Dock, and other areas on the screen. Students can also quickly switch between open applications by using the Command and Tab keys. These features can help students who have visual impairments.

### To change one or more keyboard shortcuts for a user:

- 1 In System Preferences, click Keyboard & Mouse, then click Keyboard Shortcuts.
- 2 Select the action in the Description list that you want to change. You may need to click the disclosure arrow to the left of a category to see all of the options.
- 3 Double-click the characters in the Shortcut column and press the key combination that you want to use instead.
- 4 Quit and restart any applications you are using for the new keyboard shortcut to take effect.

### To move between open applications:

- 1 Hold down the Command key, then press and release the Tab key. Large icons for all open applications appear in the middle of the screen as long as you keep holding down the Command key. The icon for the active application is at the far left.
- 2 Press and release Tab to move through the applications.
- 3 Release both keys to switch to a selected application.

## Using Spoken Commands to Control the Computer

Students can use their voice to control the computer and applications by using the Mac OS X built-in speech recognition technology, which is another way to assist students who have difficulty reading text on the screen. They can speak certain phrases, or “spoken commands,” to make the computer take different actions, such as opening documents or switching applications. This speech recognition feature is designed to work with the built-in microphones in Apple’s computers such as the MacBook, iMac, and MacBook Pro.

### To use speech recognition to control the computer:

- 1 In System Preferences, click Speech, then click Speech Recognition.
- 2 Click the Calibrate button to adapt Speech Recognition to your environment. (You should do this whenever you move that computer to a new location, such as a new room or outside.)
- 3 Speak each of the phrases listed until each command blinks, signifying it is recognized.
- 4 Click Done.

- 5 Click the On button next to Speakable Items.

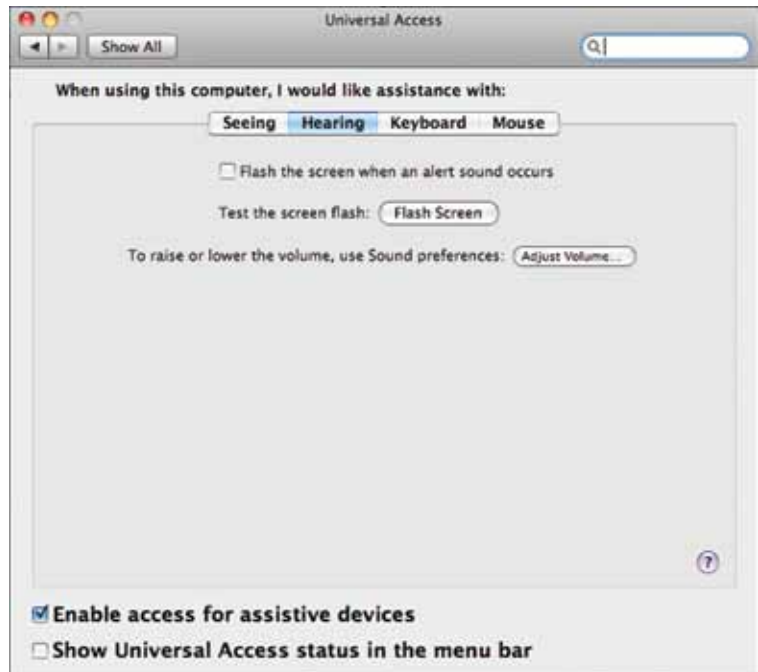
The speech feedback window appears on the desktop and shows the “listening key” that you need to press before speaking any commands. The default listening key is the Escape key. You can change the listening key by clicking Change Key.

- 6 Press the listening key and say your command in a calm voice.

You can view a list of usable speech commands by pressing the listening key and saying “Show speech commands window.”

## Customizing Settings for Hearing Impairments

For students who have difficulty hearing computer sounds and alerts, Mac OS X has technologies to assist teaching and learning. These solutions will assist students if they need sound amplification or sound output alternatives. Onscreen volume control for the built-in speaker gives them control over what they hear. Using individual headphones will reduce the noise level in a classroom and give students control over the volume.



This section discusses three of the Mac technologies that can aid students with hearing impairments:

- Universal Access Hearing preferences: For setting up the screen to flash when an alert appears instead of a sound being played
- QuickTime closed captioning support: For creating movies with captioned content
- VoiceOver: For use as a captioning device for VoiceOver-compatible applications when speech is muted

Students can also use the iMac and MacBook built-in iSight camera with iChat software to communicate via text or with video conferences in American Sign Language (ASL). (For information about using iChat, see “Communicating and Collaborating with iChat,” later in this guide.)

## Changing Alert Sounds into Screen Flashes

If students have trouble hearing the computer’s alert sounds, or if they want to use a computer with the sound muted, they can have the computer flash the screen instead of playing a sound when an alert is displayed.

### To use Flash Screen:

- 1 In System Preferences, click Universal Access, then click Hearing.
- 2 Select the “Flash the screen when an alert sound occurs” checkbox.
- 3 Click the Flash Screen button to see what the flash looks like.

You can also use the Hearing preferences pane to adjust the computer’s volume.

## Adding Captions to Video with QuickTime Pro

QuickTime Pro is a versatile application for capturing and editing video and converting video and audio files to a wide variety of formats and sizes. The text track feature of QuickTime Pro enables you and your students to add captions to any video.

To add captions to a video, you type the caption text into a TextEdit document (or another word-processing document), including the timecode for the captions. At the top of the document, you’ll need to type the text that follows, which sets up the captions to be combined with the video. (You may need to revise the text descriptor for width if your movie is a different width than 256, and you may want to choose a different font for the captions instead of Lucida Grande.)

```
{QTtext}
{font:Lucida Grande} {plain} {size:10} {justify:center}
{backgroundColor:0, 0, 0}
{timeScale:30}
{width:256} {height:36}
{timeStamps:absolute} {language:0}
```

The text for the captions then follows in the text file and includes the timecode and the captions, as in this example:

```
[00:00:00.10]
Hello, I’m Eric and welcome to our science experiment.
[00:00:00.25]
First, we’ll begin by preparing our equipment.
```

Once you have the captions file completed, save the file as a text-only document. (In TextEdit, choose Format > Make Plain Text.)

**To add captions to your video:**

**Note:** These steps are for a movie that is 256 x 192 pixels.

- 1 In QuickTime Pro, open the movie that will have the captions added.
- 2 In QuickTime Pro, choose File > Open File.
- 3 Select and open the text file that you prepared.
- 4 Choose Edit > Select All.
- 5 Choose Edit > Copy.
- 6 Click the QuickTime.mov file to bring it to the front.
- 7 Choose Edit > Select All.
- 8 Choose Edit > Add to Selection and Scale.
- 9 Choose Window > Show Movie Properties.
- 10 Scroll down and select Text Track in the list of Movie attributes.
- 11 Click the Visual Settings button.
- 12 Enter 0 as the offset value and 192 as the Y offset value to move the text track to the bottom of the movie. Press Return.

**Note:** For movies that are of a different size than 256 x 192, you can adjust this Y offset value and the movie will update to show the result until you reach the correct value.

- 13 Choose File > Save As.
- 14 Save the file as a self-contained movie.

With these steps and QuickTime Pro, you can make student-created movies fully accessible to students with hearing impairments.

QuickTime also supports CEA-608 compliant closed captions that can be played back in QuickTime Player using the Scenartist Closed Caption format (.scc). An .scc file can be added to a QuickTime movie using Compressor, an application included with two of Apple's professional digital authoring suites, Final Cut Studio and Logic Studio.

## Learn More About QuickTime Pro

To use QuickTime Pro, you need to upgrade from QuickTime, which is included with Mac OS X. QuickTime Pro adds media authoring capabilities to the tools included with QuickTime. To upgrade, you need to purchase an inexpensive registration code, which you can do via the Internet.

For more information about QuickTime Pro and to purchase a registration code, visit [www.apple.ca/quicktime/pro](http://www.apple.ca/quicktime/pro).

## Using VoiceOver as a Captioning Device

VoiceOver includes a caption panel that displays descriptions of items on the screen in compatible applications. Students should mute the VoiceOver voice to avoid disturbing others working in the same area.

### **To use VoiceOver captioning:**

- 1 In System Preferences, click Universal Access, then click Seeing.
- 2 Click Open VoiceOver Utility.
- 3 Click Speech and select Mute Speech.
- 4 Click Navigation and select "VoiceOver cursor follows mouse cursor."
- 5 Click Visuals, click the Caption Panel button, then select "Show caption panel." (You can adjust the font size, number of rows, and transparency of the Caption panel here too.)
- 6 Press Command-F5 to turn VoiceOver captioning on and off.

## Customizing Settings for Physical Motor Needs

If students have difficulties using the keyboard, mouse, or trackpad, Mac OS X offers several built-in features that provide alternate methods to access the computer and communicate with others. This section describes the following options:

- Sticky Keys: For pressing keys as a sequence instead of all at once
- Slow Keys: For slowing down the computer's response after a key is pressed
- Key Repeat: For setting how long the computer waits before repeating a key
- Mouse/Trackpad Preferences: For setting the tracking, double-click, and scrolling speed of a mouse or trackpad, and programming mouse shortcut buttons
- Mouse Keys: For using the numeric keypad instead of the mouse
- Keyboard Shortcuts: For controlling the computer with keyboard shortcuts
- Speech Recognition: For controlling the computer through voice
- Input Menu: For using the Dvorak keyboard layout, which is designed for one-handed typing



## Pressing a Group of Modifier Keys as a Sequence

To perform many tasks on the computer, you need to press one or more modifier keys (Shift, Command, Option, and Control) at the same time as another key. For example, pressing Option-Command-D shows or hides the Dock. If students are having difficulty pressing several keys at once, you can make it easier for them by turning on Sticky Keys in Universal Access preferences. With Sticky Keys turned on, students can press a set of modifier keys as a sequence. As they press each key, the symbol for the modifier key appears on the screen.

### To use Sticky Keys:

- 1 In System Preferences, click Universal Access, then click Keyboard.
- 2 Select the On button next to Sticky Keys.
- 3 To hear a sound whenever the computer registers that you have pressed a modifier key, select “Beep when a modifier key is set.”
- 4 To see an icon indicating which modifier key you have pressed, select “Display pressed keys on screen.”

## Making the Keyboard Respond More Slowly When Keys Are Pressed

The Slow Keys setting in Keyboard preferences can be used to increase the length of time between when a key is pressed and when it is activated by the computer. This helps to prevent unintended multiple keystrokes by students who may have difficulties with pressing keys quickly.

### To use Slow Keys:

- 1 In System Preferences, click Universal Access, then click Keyboard.
- 2 Select the On button next to Slow Keys.
- 3 Drag the Acceptance Delay slider to set how long you want the computer to wait after the key is pressed.
- 4 To hear a sound whenever the computer registers that you have pressed a key, select “Use click key sounds.”

## Adjusting Repeating Key Rate

You can also set how long the computer waits before it begins to repeat a key that is being pressed by adjusting the Key Repeat Rate. If students hold down a keyboard key when the insertion point is in a text area, the character begins to repeat. You can set how long they must hold down the key before the character starts repeating and how fast it repeats once it starts. Students who have limited motor control will find that this feature prevents the frustration of trying to maintain just the right amount of pressure on the keyboard to get a single letter instead of multiple letters.

### To set the key repeat rate:

- 1 In System Preferences, click Keyboard & Mouse, then click Keyboard.
- 2 Drag the Key Repeat Rate slider to set how fast characters repeat.
- 3 Drag the Delay Until Repeat slider to set how long to wait before the character begins repeating.

## Using the Numeric Keypad to Control the Mouse Pointer

If students have difficulty using the mouse, they can use the numeric keypad to move the mouse pointer and click items on the screen. This is done by turning on the Mouse Keys option in the Universal Access preferences. With Mouse Keys turned on, students can press the 5 key on the numeric keypad to click an item on the screen, press the surrounding 1 through 9 keys to move the cursor, press the 0 key to press and hold the pointer on an item, and press 5 again to release the press and hold.

### To set up Mouse Keys:

- 1 In System Preferences, click Universal Access, then click Mouse or Mouse & Trackpad. (The name of the option varies depending on whether the computer is a notebook or desktop model.)
- 2 Select On next to Mouse Keys.
- 3 Drag the Initial Delay slider to set how long to wait before the pointer moves.
- 4 Drag the Maximum Speed slider to set how quickly the pointer moves.
- 5 To be able to turn Mouse Keys on or off from the keyboard, select "Press the Option key five times to turn Mouse Keys on or off."

## Using Keyboard Shortcuts to Navigate

Students who have difficulties using the mouse or trackpad can use keyboard shortcuts to access the menu bar, Dock, and other areas on the screen. The specific keyboard shortcuts can be customized in Keyboard & Mouse preferences. Students can also use the keyboard to quickly switch between open applications with the Command and Tab keys.

For more information about these options, see “Navigating with Keyboard Shortcuts,” earlier in this guide.

## Using Speech Recognition to Control the Computer

Students who find it difficult to use the mouse, trackpad, or keyboard can use their voice to control the computer and applications by using the Mac OS X built-in speech recognition technology. They can speak certain phrases, or “spoken commands,” to make the computer take different actions, such as opening documents or switching applications.

Apple’s speech recognition is speaker-independent, so one doesn’t have to train it to one’s own voice. Apple’s computers, such as the MacBook, iMac, and MacBook Pro, include a built-in microphone that can be used for speech recognition. A headset and microphone combination is recommended when using speech recognition in noisier classroom environments.

For more information about speech recognition, see “Using Spoken Commands to Control the Computer,” earlier in this guide.

## Using the Dvorak Keyboard Layout for One-Handed Typing

A keyboard layout determines what characters appear when students press a key on the keyboard. With Mac OS X, many language input methods are available, enabling students to type in languages that use a different writing system (or “script”) from their own without having the physical keyboard that’s designed for that language. Some students may find it helpful to use the keyboard layout that is designed for one-handed typing: the Dvorak layout.

When students choose a keyboard layout different from the keyboard they have, the keys they see (and press) on the physical keyboard may be different from the characters that are displayed when they type. Students can use the Keyboard Viewer to see the location of characters on the keyboard.

**To use the Dvorak keyboard layout:**

- 1 In System Preferences, click International, then click Input Menu.
- 2 Select the checkbox next to Keyboard Viewer.
- 3 Select the checkbox next to Dvorak. (You'll need to scroll to locate this layout.)
- 4 Select the "Show input menu in menu bar" checkbox.
- 5 Click the input menu icon in the upper-right corner of the menu bar on the desktop. The input menu icon looks like a flag.
- 6 Choose the keyboard layout you want from the menu and start typing.
- 7 Choose Show Keyboard Viewer from the Input menu to see the location of the characters on the keyboard.

## Customizing Settings for Literacy and Learning Needs

Struggling readers and writers who have specific needs in areas of literacy can use technologies included in Mac OS X to address their particular learning issues. These technologies include:

- Text-to-speech synthesis: For hearing the contents of web pages and other documents read aloud
- Display Adjustment: For switching the display to white text on a black background to enhance readability
- Services command: For creating sticky notes, summarizing text, and hearing text read aloud

### Hearing the Computer Speak Selected Text

For students who have trouble reading text, you can set up Speech preferences to have the computer read aloud the selected (highlighted) text on the screen. This gives students auditory input as well as the visual input of the text they see on the screen.

Once a key combination is set up in Speech preferences, students can highlight text and press the key combination to hear the text spoken. They can have the computer speak the text in many different types of documents, including email messages and web pages, and can customize the rate at which content is read aloud. Students can also hear selected text in documents read aloud in many applications by choosing [Application Name] > Services > Speech > Start Speaking Text.

#### To hear the computer speak selected text:

- 1 In System Preferences, click Speech, then click Text to Speech.



- 2 Select the “Speak selected text when the key is pressed” checkbox.
- 3 Type one or more modifier keys (Command, Shift, Option, or Control) and another key to set the key combination you want to use to hear selected text.
- 4 Click OK.
- 5 To hear selected text read aloud, press the key combination.

## Adjusting Display Options

If students have difficulty with reading onscreen text, you can enhance the contrast on the screen or invert the colors displayed on the screen, making white and light colors dark and dark colors light. These changes take effect in all applications. Some students find it easier to read white text on a dark background than black text on a white background.

### To enhance screen contrast:

- 1 In System Preferences, click Universal Access, then click Seeing.
- 2 To remove colors from the screen, click “Use grayscale.”
- 3 To make the computer screen appear as photonegative (with white text on a black background), click White on Black.
- 4 Drag the “Enhance contrast” slider to the right to increase the contrast.

## Getting Note-Taking Support and More with the Services Command

Students who need extra support with reading, note-taking, language acquisition, and who have other learning needs may want to take advantage of the many different options offered through the Services command. This command is available in Safari, TextEdit, Mail, Pages, and many other applications. When the Finder is active, the Services command is accessed from the Finder menu; when an application such as Mail is open, it’s in the menu with the name of the application, in this case, the Mail menu.

The Services command options include:

- Make New Sticky Note: Students can create Stickies to add to their desktop or documents and can type text directly in the note or copy and paste text from another document or a web page.
- TextEdit—New Window Containing Selection: Students can highlight text they want to keep from a web page or another document and readily save it in a new TextEdit document.

- Summarize: Students can highlight a segment of text and have the computer create a summary of the content, with the student easily able to customize the level of detail they want from each paragraph. This feature can help students identify the key point in a paragraph, clarify the notes they have taken, or review what they've read.
- Look Up in Dictionary: Students can highlight a word and use this command to quickly open a Dictionary window with that entry.



### To create a sticky note from the Finder:

- 1 Click the desktop to make the Finder active.
- 2 Choose Finder > Services > Make New Sticky Note.
- 3 Type whatever text you want in the sticky note that appears on the desktop.

When you are working in an application, such as Safari, you can create new blank Stickers, or you can highlight text you want to save and choose Make New Sticky Note to create a note that contains the selected text. The note will remain on the desktop or the document until you click the note's close button to close and discard it.

### To save text from a document or a web page in a new TextEdit document:

- 1 Open the application that has the text.
- 2 Select the text that you want to keep for notes.
- 3 Choose [Application Name] > Services > TextEdit > New Window Containing Selection.

A new TextEdit document opens with the selected text.

**To create a summary of text:**

- 1 Open the file or web page that has the text you want to summarize.
- 2 Select the text you want to summarize.
- 3 Choose [Application Name] > Services > Summarize.  
The Summary window opens with a summary of the text.
- 4 Use the Summary Size slider to condense or expand the summary.

**To quickly look up the definition of a word:**

- 1 Open the document or web page that has the word you want to look up.
- 2 Select the word you want to learn about.
- 3 Choose [Application Name] > Services > Look Up in Dictionary.  
You can also display the entry by selecting and then Control-clicking the word (or right-clicking using a Mighty Mouse), then choosing Look Up in Dictionary from the shortcut menu.

**Learn More About the Services Menu**

- In the Finder, choose Help > Mac Help, then select the feature you'd like to know more about, such as Stickies.

## Customizing Settings for Multiple Languages

With Mac OS X, you can change the language shown in menus and dialogs and see dates, times, and numbers displayed according to the conventions of a geographic region. You can also type in a language that uses a different writing system (or script) than English without the need for a keyboard designed for that language. With multiple languages being represented in so many classrooms, it is helpful to be able to configure the onscreen display and keyboard to work with whatever language is needed.

### Displaying Languages Other than English on the Computer

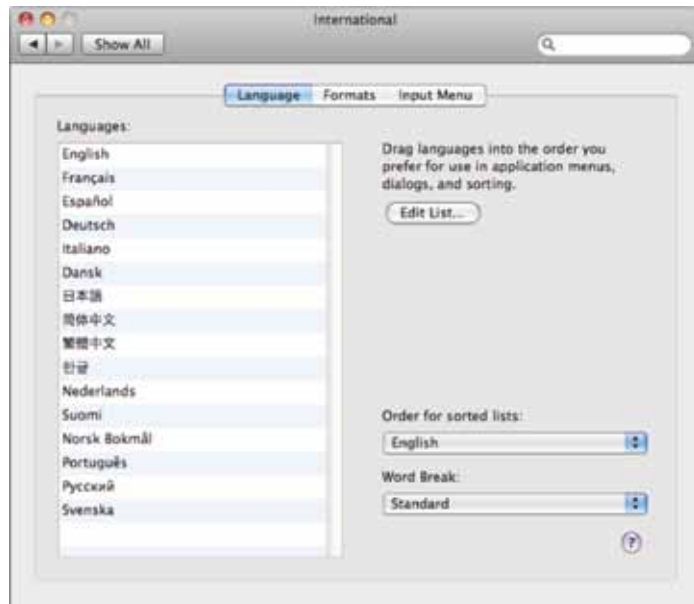
You use Language preferences to change the language shown in menus and dialogs and to see dates, times, and numbers for a particular region. Students can also view multilingual text documents on the computers. Applications that support Unicode, a worldwide standard for encoding multilingual text, can display any language. Some applications may not support all languages and in this case there may be missing or strange characters in the text. If students have trouble viewing multilingual text, they should open the document using a Unicode application such as TextEdit.

Mac OS X comes with 16 languages and includes broad support for many others. This means you don't have to purchase separate copies of the operating system for students who are multilingual. The languages that are included are the following:

- English
- Dutch
- Swedish
- Spanish
- Italian
- Japanese
- German
- Danish
- Finnish
- French
- Norwegian
- Korean
- Brazilian Portuguese
- Traditional Chinese
- Simplified Chinese
- Russian

**To change the language displayed on the computer:**

- 1 In System Preferences, click International, then click Language.



- 2 Drag the language you want to see in menus, windows, and dialogs to the top of the list. Changes take effect in the Finder when you close System Preferences and in applications the next time they're opened.
- 3 Click the Formats button in the International preferences pane to change the calendar type or the region used for the time, number formatting, and other elements.

**Customizing Keyboard Layouts for Multiple Languages**

The keyboard layout determines what characters appear onscreen when a key is pressed on the keyboard. Using International preferences in Mac OS X, you can set up a computer so that students can choose to use the keyboard for a language other than English. To have students be able to use a different keyboard, you select its layout in the Input Menu pane of International preferences. Then, when a student wants to use that keyboard, he or she chooses it from the input menu that is displayed on the right side of the menu bar. Students can also choose the Keyboard Viewer from the input menu to see the location of the characters on the keyboard.

**To adjust keyboard layouts:**

- 1 In System Preferences, click International, then click Input Menu.
- 2 Select the checkbox next to Keyboard Viewer.
- 3 Select the checkbox next to the keyboard layout or layouts you want students to be able to use. (You'll need to scroll to locate most of the layouts.)
- 4 Select the "Show input menu in menu bar" checkbox.
- 5 Click the input menu icon (the flag) in the upper-right corner of the menu bar on the desktop.
- 6 Choose the keyboard layout from the menu and start typing.
- 7 Choose Show Keyboard Viewer from the input menu to see the location of the characters on the keyboard.

**Learn More About Multiple Languages**

For more information about using multiple languages, you can visit

[www.apple.ca/macosex/features/300.html#international](http://www.apple.ca/macosex/features/300.html#international)

# Using the Applications on a Mac with Diverse Learners

Every new Mac computer comes with powerful software to assist students with their work. They can conduct research with Safari, pull up a world of knowledge with Dashboard widgets, collaborate with iChat, keep track of homework with iCal, share knowledge with digital media projects via iLife, and much more.

With a broad range of versatile tools, every learner will easily find more ways to improve their skills and to express themselves creatively. The following sections introduce the applications, suggest how they may be helpful to learners with different needs, and provide resources for more information.

## Communicating and Collaborating with iChat



A powerful yet easy-to-use communication application, iChat allows students to connect with others via video, audio, and text. Through video conferences, audio conferences, instant text messages, and the ability to send and receive files, students can get just-in-time assistance with their projects by sharing information with others in the next classroom or by learning from experts in remote locations across the globe.

iChat offers many ways to support diverse learners in the classroom. For example:

- Students who are deaf can readily communicate with others using American Sign Language via video conferences.
- Students with vision impairments or those developing language proficiency can use audio chats to speak together while collaborating on a project.
- Students can collaborate on class projects by using text chats to engage in written conversations and to transfer files and photos, an especially useful tool for those with hearing impairments.

- Students can collaborate with others on projects by using iChat screen sharing to observe and control a single desktop. iChat initiates the connection (asking permission first), automatically initiates an audio chat so students can talk through things while sharing a screen, and allows both parties to control the screen at all times. Students can even drag files from one computer to the other while screen sharing.
- You can monitor students' language development by recording their iChat audio and video conferences and keep track of writing progress by saving their text chats. iChat asks permission from the different parties beforehand and then stores audio chats as AAC files and video chats as MPEG-4 files so they can be shared or synced with an iPod. These files can also be shared with students' families.
- English language learners can practice their English and also communicate in their heritage language in video intercambios—cultural exchanges—in which students in the classroom collaborate on projects with students in other parts of the world.
- Students and families can use iChat capabilities to maintain the home/school connection if students are unable to attend school due to illness or travel.

It's easy to set up iChat to communicate with text, audio, and video. For instant text messages and audio conferences (with up to ten people), you just need iChat and a Mac computer with its built-in microphone. For video conferences (with up to three participants), you need a Mac with iChat, a broadband Internet connection, and an iSight camera, which now comes built into every new MacBook, MacBook Pro, and iMac. (iSight cameras can also be purchased separately, ready to plug into the FireWire connection on any Mac.)

For students to be able to chat with others who aren't on the same local network, they will need an instant messaging address, also known as a screen name, which can be a MobileMe account name,\* an AIM or AOL screen name, or a jabber screen name (to chat with jabber buddies).

Many schools are now using iChat Server, included with Mac OS X Server, to set up their own secure, private IM server for students to collaborate with each other. You can also use Parental Controls in System Preferences to designate those with whom students may conduct chats.

\*The MobileMe service is available to persons age 13 and older. Annual membership fee and Internet access required. Terms and conditions apply.

**To get started with iChat:**

- 1 Open the iChat application, located in the Dock and in the Applications folder.
- 2 When a person in your Buddy List is connected to the Internet and logged in to iChat, the person is listed as "Available" in your Buddy List. (Choose Buddies > Add Buddy to add someone to your Buddy List.)
- 3 To send a message, double-click the person's name. When your buddy replies, the response appears on your screen.  
A video icon next to the person's name means that person is available for a video conference; a phone icon indicates that you can have an audio chat.
- 4 To share a screen in iChat, initiate a chat, then choose Buddies > Share My Screen. (Be sure that Screen Sharing Enabled is checked in the Video menu.)

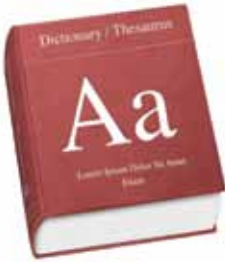
**Learn More About iChat**

- Choose Help > iChat Help to see onscreen help information.  
You can also visit the following website:

**iChat Support**

[www.apple.ca/support/ichat](http://www.apple.ca/support/ichat)

Articles, tutorials, demo movie, and more



## Exploring Words with an Accessible Dictionary

Mac OS X includes a dictionary application that provides access to a fully searchable copy of the *Canadian Oxford Dictionary*, the *Oxford American Writer's Thesaurus*, and Wikipedia (accessible when you're connected to the Internet). As students begin typing the word they are seeking, Dictionary displays a list of words from which to choose. Dictionary entries include a pronunciation guide and parts of speech as well as a definition. Some entries include sample sentences that use the word, and others include images to reinforce meaning.

Students struggling with sequencing often spend more time thumbing through pages of a dictionary than they do accessing definitions. Because Dictionary allows students to type a word to look it up, many students will find it much easier to locate the information they need.

Dictionary also offers quick ways students can look up a word when working in many applications, such as TextEdit and Safari, without needing to first open Dictionary and type a word. These options can be especially helpful for students with reading difficulties who are trying to understand often-challenging web page text. Students with reading difficulties or who are English language learners may find that hearing the entries read aloud provides a rich medium for language development.

### To get started with Dictionary:

- 1 Double-click the Dictionary application icon, located in the Applications folder. (You can add the icon to the Dock for easier access.)
- 2 Click Dictionary or Thesaurus, depending on which resource you want to use, or click All if you want to see all the dictionary, thesaurus, and Wikipedia entries for a word.
- 3 Type a word and then select the word you want from the list that appears.
- 4 To hear the entry read aloud, select the text and choose Dictionary > Services > Speech > Start Speaking Text.

### To look up a word's definition when working in many applications, such as Safari:

- 1 To open the Dictionary entry, select and then Control-click the word (or right-click using a Mighty Mouse), then choose Look Up in Dictionary from the shortcut menu. Alternatively, select the word and choose [Application Name] > Services > Look Up in Dictionary.
- 2 To display a floating window with the word's definition, place the pointer on the word, then press Command-Control-D.

## Learn More About Dictionary

- Choose Help > Dictionary Help to see onscreen help information.

You can also visit the following website:

### **Mac 101: Dictionary**

[www.apple.ca/support/mac101/work/5](http://www.apple.ca/support/mac101/work/5)

How-to steps for using Dictionary

## Promoting the Strengths of All Learners with iLife



The iLife suite of applications offers a powerful set of tools for students to represent their learning with media-rich digital projects. iLife provides versatile visual, auditory, and three-dimensional tools to present information and concepts to students in ways other than lectures or reading assignments.

iLife '09 includes five highly integrated and easy-to-use applications:

- iPhoto for importing, organizing, editing, and sharing photos and other images
- iMovie for combining video, sounds, pictures, and text in digital movies
- GarageBand for creating and recording music, podcasts, and other audio
- iWeb for creating web pages that can include photos, movies, text, and podcasts
- iDVD for producing DVDs to store and share digital media projects (requires a Mac computer with a SuperDrive or a third-party DVD burner)

While all students benefit from using iLife to express ideas and showcase expertise, these tools are particularly powerful for diverse learners. Allowing students to present their understanding in the modality that best represents their strengths is a benefit to teachers and students alike. For instance, auditory learners might use GarageBand to create a spelling or poetry podcast while visual learners might choose an iPhoto photo book or slideshow to demonstrate geometric shapes—all are activities that excite and engage students and provide you with assessment information. These methods can be particularly powerful for students who have disassociated themselves from traditional textbook learning.

In addition, English language learners and students with special needs often require some sort of remediation, which usually takes the form of worksheets and drill and practice activities. While the development of basic skills is essential to academic success, using the iLife tools provides fertile ground for student success in school and beyond. For instance, students who are developing proficiency in English could make movies of each other taking part in dialogues that use key vocabulary words and then replay the movies to further reinforce their learning.

Another benefit of the iLife applications is that they're all designed to work with each other and other Apple applications, so it's easy to use media from one application in another. For example, photos in an iPhoto library can be readily added to a Keynote presentation, a podcast created with GarageBand, an iMovie project, or a report created with Pages. Just click to open the Media Browser in the application in which you're working and you have instant access to your entire photo library. This means technology takes less mental energy for students to use, and they have more time and energy to focus on assignments.

The next sections describe the applications included with iLife '09 and include suggestions for how you might use them with your students.



## Supporting Visual Learning with iPhoto

iPhoto is a versatile application for organizing, editing, and sharing photos and other images. Images can be imported into iPhoto from a camera, website, DVD, or CD. For example, you can scan student artwork into the computer and import those images into iPhoto to share with the class and students' families. When you import photos, iPhoto automatically groups the images into Events, which are based on when the photos were taken. Each Event is displayed in iPhoto with a name that you add and one of the images from the Event, which you can change. This organization makes it easy for students, especially visual learners, to quickly find what they're looking for in an iPhoto library. Images can also be organized into photo albums. Once images are imported, they can be enhanced with the iPhoto editing tools.

iPhoto provides you with a number of ways to share the images, including slideshows, photo books, calendars, web pages, and more. You can even create a class album of images on your computer and share it with student computers so students can use your images in their projects.

With a digital camera and iPhoto, you and students can capture in a concrete visual way many of the aspects of learning that are traditionally print-oriented. This can aid many students, including those who are struggling readers, developing English skills, and especially strong in expressing themselves visually. Examples of such projects produced with iPhoto include:

- Flash cards that combine text and photos for students to study vocabulary, math facts, and other information
- Student reports illustrated with images from iPhoto albums
- A teacher-created photo book of the math problem of the week that includes pictures
- Teacher-created iPhoto slideshows to present lab instructions with images
- Web pages produced by students with images that illustrate key concepts in a unit of study

### To open iPhoto:

- Click the iPhoto icon in the Dock or double-click the icon in the Applications folder.

### Learn More About iPhoto

- Choose Help > iPhoto Help to see onscreen help information.

You can also visit the following websites:

#### iPhoto

[www.apple.ca/iphoto](http://www.apple.ca/iphoto)

Information and resources for using iPhoto with students

**iPhoto Multimedia Tutorial**

[www.apple.ca/ilife/tutorials/#iphoto](http://www.apple.ca/ilife/tutorials/#iphoto)

Learn how to make iPhoto projects

**iPhoto Support**

[www.apple.ca/support/iphoto](http://www.apple.ca/support/iphoto)

Articles, discussion boards, tutorials, and other resources

**Apple Learning Interchange**

<http://edcommunity.apple.com/ali>

Educator-created lesson plans, student project examples, and more



## Presenting Digital Stories with iMovie

With iMovie, students are able to tell a story and communicate meaning through video, audio, narration, still images, and text. iMovie is simple to use yet provides everything needed to make professional-looking movies. Features of iMovie include:

- Quick import of video clips from a digital video camera
- Ability to add still images from iPhoto, music created in GarageBand, or audio stored in iTunes
- Tools that allow students to crop clips and do other editing tasks, such as adding transitions, titles, and more

When a movie is finished, it can be added to a web page, sent to an iPod, copied to a CD, or sent to iDVD to produce a DVD, complete with menus and navigation tools (available on computers that have a SuperDrive).

iMovie offers many ways to aid diverse learners in the classroom, including the following:

- Students with writing difficulties may find the process of writing a script, with its inclusion of visual and audio elements and the excitement of “making a movie,” more engaging than other kinds of narrative writing assignments.
- For visual learners, producing movie projects provides opportunities to use their visual spatial strengths while developing their storytelling skills.
- Working on movie projects helps students who struggle with sequential ordering to strengthen those skills.
- iMovie projects are ideal for student collaboration—with the many different types of skills needed to produce a movie, all students are able to contribute in ways that both showcase their strengths and build their skills.
- Captions can be added with subtitles in iMovie or added to the finished movies with QuickTime Pro for students who are deaf or have hearing impairments and for English language learners. The captioned movies can also be used to help strengthen reading skills.

You can use a digital video camera to capture yourself introducing key skills and concepts. Students can then view these movies on a computer at home for review or support while they are doing their homework or to catch up on assignments when they have been absent. You can also catalog these movies for future classes.

### **To open iMovie:**

- Click the iMovie icon in the Dock or double-click the icon in the Applications folder.

## Learn More About iMovie

- Choose Help > iMovie Help to see onscreen help information.

You can also visit the following websites:

### **iMovie**

[www.apple.ca/imovie](http://www.apple.ca/imovie)

Information and resources for using iMovie with students

### **iMovie Multimedia Tutorial**

[www.apple.ca/ilife/tutorials/#imovie](http://www.apple.ca/ilife/tutorials/#imovie)

Learn how to make iMovie projects

### **iMovie Support**

[www.apple.ca/support/imovie](http://www.apple.ca/support/imovie)

Articles, discussion boards, tutorials, and other resources



## Using GarageBand to Communicate with Sound

With GarageBand, students are able to easily create a song, produce a podcast, record a reading sample, or score a movie. GarageBand comes with hundreds of musical loops and sounds for students to use in creating their own songs. It also includes the Magic GarageBand feature, which allows students to compose songs with a virtual onstage band in minutes. Students can record their own performances, either solos or in groups—an excellent way to showcase students’ musical skills or interests. Students can also use the tools in GarageBand to produce their own podcasts—recorded audio files that are posted on the Internet and that can be subscribed to by others.

The following are just some of the ways you might want to use GarageBand with the diverse learners in your classroom:

- Students who have difficulty with memorizing math facts, formulas, vocabulary words, and definitions can put them to music, create raps, or produce their own auditory study guides with background music. They can then review them as often as needed on a computer or an iPod, turning “remedial instruction” into a “cool” activity.
- With GarageBand, you can create podcasts to help students review important concepts or assignments for students to use at home to help them with homework or study for a test.
- Students can record themselves reading, which allows them to play back what they’ve read and do self-evaluations, building to self-corrections.
- Students can make audio recordings of books for younger children to use to read along, giving themselves reinforcement of reading skills and engaging them in reading for a real audience.
- GarageBand provides the means for you to easily record lectures that students can then review, which is especially useful for auditory learners and those who have difficulties with note-taking.

### **To open GarageBand:**

- Click the GarageBand icon in the Dock or double-click the icon in the Applications folder.

### **Learn More About GarageBand**

- Choose Help > GarageBand Help to see onscreen help information.

You can also visit the following websites:

#### **GarageBand in Education**

[www.apple.com/education/garageband](http://www.apple.com/education/garageband)

Information and resources for using GarageBand with students

**GarageBand Multimedia Tutorial**

[www.apple.ca/ilife/tutorials/#garageband](http://www.apple.ca/ilife/tutorials/#garageband)

Learn how to compose songs, create podcasts, and more

**GarageBand Support**

[www.apple.ca/support/garageband](http://www.apple.ca/support/garageband)

Articles, discussion boards, tutorials, and other resources

## Sharing Student Work with iWeb



Sharing student work on a website—with a real audience and purpose—provides a powerful incentive for students. With iWeb, it's simple to create web pages. Just select one of the predesigned templates, add students' images, movies, text, blogs, podcasts, and other audio, and then publish the site with one click with a MobileMe account (an account available from Apple on a yearly subscription basis that offers a suite of Internet tools)\*. Sites created with iWeb can also be published to a folder and then uploaded to a server other than MobileMe.

Students with writing difficulties may find writing blogs an engaging way to develop their skills. (A blog is a series of text entries on a web page, similar to a journal.) Students can use iWeb to set up a blog with news of the classroom, a reading log, or a report on the progress of science experiments. As they write new entries, they can also attach artwork, videos, photos, or audio files.

iWeb can promote the home/school connection as it provides a simple method for you to keep students' families informed of the work they're doing in the classroom. Each student's site created with iWeb can provide a space for his or her podcasts and blogs, with built-in subscriptions via RSS so that families and friends can get automatic updates on the student's activities and accomplishments. The opportunity to highlight student strengths provides a means for every student to feel a valued part of the class, especially for students who have not been recognized for academic success in the traditional ways.

### To open iWeb:

- Click the iWeb icon in the Dock or double-click the icon in the Applications folder.

### Learn More About iWeb

- Choose Help > iWeb Help to see onscreen help information.

You can also visit the following websites:

#### iWeb

[www.apple.ca/iweb](http://www.apple.ca/iweb)

Information and resources for using iWeb with students

#### iWeb Multimedia Tutorial

[www.apple.ca/ilife/tutorials/#iweb](http://www.apple.ca/ilife/tutorials/#iweb)

Learn how to create blogs, websites, and more

#### iWeb Support

[www.apple.ca/support/iweb](http://www.apple.ca/support/iweb)

Tutorials, articles, and discussion boards

\*The MobileMe service is available to persons age 13 and older. Annual membership fee and Internet access required. Terms and conditions apply.



## Accessing Internet Information with Safari

Safari, the simple-to-use web browser that comes with every Mac, includes a built-in Google search box in the address bar, tabbed browsing, and the ability to receive the latest news and information via RSS (Really Simple Syndication) technology. (With RSS, you subscribe to sites, such as news and community organizations, that offer such news feeds. Articles from these sites then appear in an ad-free list in Safari, an easy way for all students to stay up to date.)

With tabs in Safari, students can quickly switch between multiple web pages in a single window. This enables students to quickly and easily compare information on a subject from multiple sources, which can help them learn how to evaluate information presented on the Internet. Tabs can be moved by dragging them in the tab bar and can be separated by dragging them into a new window. You may find it helpful to set up such tabs for a group of sites you want students to visit, especially when students might have difficulty searching or navigating the web browser on their own.

Bookmarks are another way to organize a group of sites for students to access. You can add bookmarks for those sites to the Safari Bookmarks bar and students just click the name to go to the site. You can even bookmark a set of tabs so you only have to set them up once. By using Parental Controls in System Preferences, you can limit the specific sites that students are allowed to browse. (For more information, see “Setting Up Individual User Accounts on a Computer,” earlier in this guide.)

Safari has other features that may be beneficial to students with a variety of needs, such as the following:

- Students can hear selected text read aloud, an essential resource to access text at or above their reading level as well as for students with visual needs. (For more information, see “Hearing the Computer Speak Selected Text,” earlier in this guide.)
- Students who are beginning readers or who have visual needs will appreciate the ability to enlarge print on any web page by clicking the Text Size icon.
- Students who have problems with attention may find it helpful to use the search bar to instantly and graphically locate any text on the current web page. When a search is underway, Safari highlights every instance of the word being searched for and even dims the rest of the page. This can make it easier for students to focus on the results of their search.
- Students can take advantage of the note-taking assistance offered through the Services command—they can save selected text in a sticky note on the desktop or in a new TextEdit document or summarize selected text. These features can be especially helpful for students who have problems with attention, writing, or reading, or who are English language learners. (For more information, see “Getting Note-Taking Support and More with the Services Command,” earlier in this guide.)

**To open Safari:**

- Click the Safari icon (the compass) on the Dock or double-click the icon in the Applications folder.

**To add the Text Size icon to the address bar:**

- 1 Choose View > Customize Address Bar.
- 2 Drag the Text Size icon into the address bar. Now students can click the Text Size icon to enlarge text on any website.

**To search within a web page:**

- 1 Choose Edit > Find > Find. A search bar appears.
- 2 Type a word into the search field at the right end of the search bar.
- 3 Click the left and right arrows to reverse the direction of the search.

**Learn More About Safari**

- Choose Help > Safari Help to see onscreen help information.

You can also visit the following websites:

**Mac OS X: Safari**

[www.apple.ca/macosx/features/safari.html](http://www.apple.ca/macosx/features/safari.html)

Information about Safari

**Safari Support**

[www.apple.ca/support/safari](http://www.apple.ca/support/safari)

Articles about Safari, tutorials, discussion boards, and other resources

## Finding Information Quickly with Dashboard Widgets



All learners will appreciate the specificity and simplicity of widgets—small applications that perform one or two specific tasks, enabling students to quickly access information without the need to open an application. Widgets are part of the Dashboard application—when the application is opened, a semitransparent layer of widgets appears over the user’s desktop. Each user on a computer can have a different set of widgets to access when Dashboard is open.

Many widgets come with Mac OS X and thousands more are available on the Dashboard Widgets website. You can even build your own widgets, clipping a portion of a web page you want and placing it on your Dashboard. Whenever that portion of the web page changes, the widget updates as well. To use some widgets, you must be connected to the Internet.

You may want to review your curriculum, class assignments, and assessments to determine which widgets might be most helpful in keeping students on track and organized. You can help students analyze their learning profile and select or build widgets that maximize their strengths and help them work around their learning challenges. Because each user has his or her own customizable Dashboard, you can choose a selection of widgets that will best meet a student’s specific needs—widgets that will allow them to practice skills, organize their time, locate information, and translate languages.

Some educator-recommended widgets useful in classrooms include:

### Widgets Included with Mac OS X

#### **Dictionary**

Quickly find definitions, thesaurus entries, synonyms, antonyms, and more.

#### **Translator**

Translate words and phrases instantly among 12 languages.

#### **Calculator**

Perform basic calculations quickly and easily (not all features in the Calculator application are available with the widget).

#### **Unit Converter**

Convert numerous units of weight and measure, including area, currency, length, speed, temperature, and more.

#### **Calendar**

Get at-a-glance access to daily and monthly calendars.

## Widgets Available for Download

[www.apple.ca/downloads/dashboard](http://www.apple.ca/downloads/dashboard)

### **PixAide by Slater Software**

Type a word and find a picture symbol that communicates the concept.

### **Countdown Plus by Steven Chaitoff**

This simple widget counts down to a user-specific date and event. This is especially helpful for keeping track of project due dates.

### **ProVoc Widget by Arizona Software**

Students can keep learning and repeating vocabulary at any time.

### **Species Distribution Map from GBIF**

This widget displays a distribution map for a species (or any taxon) from the GBIF data network.

### **To get started with Dashboard:**

- 1 Click the Dashboard icon in the Dock or press the F12 key to open Dashboard.
- 2 Click the open (+) button to reveal the widget bar and access your widgets. Click the close (x) button to hide the widget bar.
- 3 To open a widget, click its icon or drag it out of the widget bar.
- 4 Use the arrow buttons on the widget bar to see other available widgets.
- 5 To return to the desktop, press the F12 key or click the desktop.
- 6 To add more widgets, press the Dashboard icon in the Dock, then choose More Widgets from the shortcut menu that appears.

### **To create your own widget from a web page:**

- 1 Open the web page in Safari.
- 2 Click the Web Clip icon (the icon with scissors at the top right of the window) and drag to select the portion of the page you want.
- 3 Click Add to see the new widget spring to life on your Dashboard. The widget is “live” and will update as its page of origin changes.

## Learn More About Widgets

You can visit the following websites:

### **Mac OS X: Dashboard**

[www.apple.ca/macosx/features/300.html](http://www.apple.ca/macosx/features/300.html)

Information about Dashboard

### **Dashboard Widgets to Download**

[www.apple.ca/downloads/dashboard](http://www.apple.ca/downloads/dashboard)

Additional widgets for download

### **Developing Dashboard Widgets**

<http://developer.apple.com/macosx/dashboard.html>

Information about developing your own Dashboard widget



## Keeping Track of and Managing Tasks with iCal

iCal is an easy-to-use calendar application included with every Mac computer. The iCal window looks like a typical calendar with month, week, and day views, but one element that sets it apart is its color-coded categories feature. Now students can organize their homework for different classes and other important school dates in one calendar.

Students with organizational difficulties will find iCal particularly helpful because they can use it to quickly organize a wide variety of data in one place. Features of iCal that they can use to improve their classroom performance include:

- To Do lists: Students can use these lists to keep track of upcoming assignments or tests.
- Info pane: This is where students can add details about assignments.
- Search feature: Students can easily search for specific upcoming assignments instead of reading all entries in a calendar.
- Alarms: Calendars can be set up so that students will see or hear one or more alarms before or after an event or to-do item occurs. Teachers can use iCal to publish homework calendars via the Internet that update automatically when changes are made. By subscribing, students and parents are able to stay up to date on dates for assignments, tests, and class events.

### To open iCal:

- Double-click the iCal icon, located in the Applications folder.

### Learn More About iCal

- Choose Help > iCal Help to see onscreen help information.

You can also visit the following websites:

#### Mac OS X: iCal

[www.apple.ca/macosx/features/300.html#ical](http://www.apple.ca/macosx/features/300.html#ical)  
Information about iCal

#### iCal Support

[www.apple.ca/support/ical](http://www.apple.ca/support/ical)  
Articles about iCal, tutorials, discussion boards, and other resources



## Supporting Written Work with TextEdit

Each Mac includes TextEdit, an easy-to-use application for viewing, creating, and editing text. With TextEdit, students can quickly create documents they can share with one another—from notes taken in class to a paper that needs to be proofread. TextEdit documents can include tables, images, and movies. You can use TextEdit, for example, to format class worksheets that include columns with different categories for students to fill out, which can help students with organizational difficulties to stay on task.

TextEdit offers many additional ways to support students' writing projects, including:

- **Spelling checker:** One feature of the spelling checker is that students can check the spelling in their documents as they type, providing extra support for those who have difficulties with spelling.
- **Support for multiple languages:** TextEdit documents can include text in multiple languages within the same document, including those that use characters not on the standard keyboard, such as Japanese and Chinese. This can be an aid to English language learners in the classroom. (For more information, see “Customizing Settings for Multiple Languages,” earlier in this guide.)
- **Links to websites:** TextEdit documents can contain hyperlinks to websites, a way for you to provide students with documents that they can use onscreen to quickly navigate to a relevant website, without the need to open a browser and type a URL.
- **Text-to-Speech:** Many students, such as English language learners, struggling readers, or those with visual impairments, may find it helpful to hear text in a TextEdit document read aloud. This can be text they wrote or text copied from a web page or another source. (For more information, see “Hearing the Computer Speak Selected Text,” earlier in this guide.)
- **Summarize:** English language learners and struggling readers and writers especially will appreciate this feature, available from the Services command in the TextEdit menu, that allows them to summarize selected text. (For more information, see “Getting Note-Taking Support and More with the Services Command,” earlier in this guide.)

### To open TextEdit:

- Double-click the TextEdit icon, located in the Applications folder. (You may want to add the icon to the Dock for easy access.)

### **Learn More About TextEdit**

- Choose Help > TextEdit Help to see onscreen help information.

You can also visit the following website:

#### **Mac 101: TextEdit**

[www.apple.ca/support/mac101/work/23](http://www.apple.ca/support/mac101/work/23)

Short tutorial for using TextEdit



## Improving Math Skills with Calculator and Grapher

Every Mac includes two applications ready to improve student mathematical performance: Calculator and Grapher. Calculator provides users with a basic, scientific, and programmer's calculator. In addition to performing numerical calculations, students can also use Calculator to convert units of measure, allowing them to focus on the mathematical concepts instead of on basic calculations. Students can use either the keyboard or mouse to enter data.

Here are some of the ways Calculator can help the diverse learners in your classroom:

- With text-to-speech, students needing auditory feedback can hear numbers and totals read aloud. This feature can also help students who are developing English proficiency to reinforce the names for numbers and other mathematical concepts.
- The View Paper Tape feature provides visual reinforcement for students who will benefit from having a record of the steps they've used and the results at each step as they are developing higher-level thinking skills.
- Students with a math-related learning disability such as dyscalculia may want to use the Calculator on a daily basis.

Grapher, a full-featured 2D and 3D equation graphing application included on every Mac, provides visual learners with graphical representations of mathematical concepts. Students can create many different types of 2D and 3D graphs and then analyze the results. Completed graphs can be saved as PDF files and then used in other applications, such as in printed study guides or presentations. You and your students can also use the features of Grapher to construct QuickTime movies to demonstrate any equation that uses a parameter that you've defined, and then present the animation to the class. For students who need extra practice and reinforcement, these concrete learning representations can make mathematics more real.

### To open Calculator:

- Double-click the Calculator icon located in the Applications folder, or click its icon in the Dock.

### To hear names of buttons or keys pressed or results read aloud:

- In Calculator, choose Speech > Speak Button Pressed or Speak Result.

### To open Grapher:

- Double-click the Grapher icon, located in the Utilities folder. (You may want to add the icon to the Dock.)

## Learn More About Calculator and Grapher

- In Calculator, choose Help > Calculator Help to see onscreen help information. In Grapher, choose Help > Grapher Help to see onscreen help information.

## Organizing and Sharing Audio Files with iTunes



With iTunes, you and your students can easily store and organize music, podcasts, and other audio files in one application. The files stored in iTunes might include student reading samples, historical speeches, audiobooks, background music for movie projects, music created by students in GarageBand, foreign language reading samples, and recorded iChat video and audio chats.

You can organize your files into playlists in your iTunes Library and then share those playlists with computers on your local network. This means users of those computers have access to the iTunes media files on your computer without the need to burn CDs or transfer files.

Diverse student needs can be met in various ways with iTunes:

- The iTunes application is compatible with VoiceOver, allowing students with visual disabilities to navigate through their songs and playlists.
- You can download audiobooks from the Internet and store them in iTunes for emerging readers or those with vision impairments—they can then listen to the books on the computer or sync (download) the files onto an iPod.
- You can record your lectures or short reading assignments with GarageBand or an iPod with a voice recorder and then add them to iTunes and sync them to iPod or copy them to CDs. This can be an aid for many students, such as those who have difficulty taking notes on lectures in class.
- Students who are English language learners can use GarageBand or an iPod with a voice recorder to record themselves reading aloud to practice their English and use iTunes to save and compare the files.

### To open iTunes:

- Click the iTunes icon in the Dock or double-click the icon in the Applications folder.

### Learn More About iTunes

- Choose Help > iTunes Help to see onscreen help information.

You can also visit the following websites:

#### iTunes Overview

[www.apple.ca/itunes/overview](http://www.apple.ca/itunes/overview)

Information about iTunes

#### iTunes Tutorial

[www.apple.ca/itunes/tutorials](http://www.apple.ca/itunes/tutorials)

Tips for using iTunes

#### iTunes Support

[www.apple.ca/support/itunes](http://www.apple.ca/support/itunes)

iTunes Support page with articles and discussion boards



# More Tools to Enhance Teaching and Learning

Although every Mac is equipped with a broad array of tools to make learning more accessible and engaging, some additional Apple tools and applications can be purchased to complement these tools.

iWork provides three powerful applications: Pages, a streamlined word processor, Keynote, for creating cinema-quality presentations, and Numbers, an innovative spreadsheet program. The iPod is also a versatile learning tool for the classroom, providing a combination of auditory and visual capabilities to address many learners' needs.

## Creating, Publishing, and Presenting with iWork



iWork provides students with tools for communicating in today's world. Using iWork, students can express their visual and creative sides with three easy-to-use applications. Students can use Pages to create all sorts of documents that combine text with supporting images, videos, graphs, charts, and more. Templates in Pages give students a choice of professionally designed layouts they can use to get a head start on structuring their document. Keynote allows students to produce cinema-quality presentations that give them the confidence to stand in front of peers and speak from a position of expertise. Keynote presentations can include video, audio, photos and other images, text, and even three-dimensional graphs, all easily combined in a choice of templates. With Numbers, students can choose a blank sheet, a grid with empty rows and columns, or open a preformatted template—one they can quickly customize and populate with graphs, tables, and charts. Calculations are made by simply dragging one of the 150 built-in formulas to cells or by using common phrases like "total cost."

The seamless integration of iWork with iLife means, for example, that students can easily use their images from iPhoto in a Pages document or a movie created with iMovie in a Keynote presentation. The Media Browser that is used in the iLife applications is part of the iWork applications as well, allowing ready access to media files. Students can even take a prerecorded audio file from iTunes and add it to an iWork document.

Keynote's speaker notes and the Presentation Display feature make it easy for even the least confident presenters to do a polished job of sharing their project. Students who are more comfortable being the center of attention (positively or negatively) rather than doing traditional learning tasks can find success presenting with Keynote.

**To open Pages, Keynote, or Numbers:**

- Click the Pages, Keynote, or Numbers icon located in the iWork folder in the Applications folder.

**Learn More About iWork**

- Choose Help > Pages Help, Keynote Help, or Numbers Help to see onscreen help information.

You can also visit the following websites:

**Pages**

[www.apple.ca/iwork/pages](http://www.apple.ca/iwork/pages)

Information and resources for using Pages with students

**Keynote**

[www.apple.ca/iwork/keynote](http://www.apple.ca/iwork/keynote)

Information and resources for using Keynote with students

**Numbers**

[www.apple.ca/iwork/numbers](http://www.apple.ca/iwork/numbers)

Information and resources for using Numbers with students

**iWork Multimedia Tutorials**

[www.apple.ca/iwork/tutorials](http://www.apple.ca/iwork/tutorials)

Learn how to create documents, presentations, and spreadsheets

**Pages Support**

[www.apple.ca/support/pages](http://www.apple.ca/support/pages)

Tutorials, articles, and discussion boards

**Keynote Support**

[www.apple.ca/support/keynote](http://www.apple.ca/support/keynote)

Tutorials, articles, and discussion boards

**Numbers Support**

[www.apple.ca/support/numbers](http://www.apple.ca/support/numbers)

Tutorials, articles, and discussion boards

**Apple Learning Interchange**

<http://edcommunity.apple.com/ali>

Educator-created lesson plans, student project examples, and more



## Using the iPod as a Portable Learning Tool

Adding an iPod to the technology in the classroom means gaining a versatile, portable tool that allows students to learn wherever they are. Using an iPod, students at all levels can listen to audiobooks, speeches, foreign language samples, and podcasts (recorded audio files posted to websites). Students can also reinforce their auditory learning by viewing slides, photos, and video (on iPod models that display photos and video) as well as text files. Audio files are copied, or synced, onto the iPod from an iTunes library when the iPod is connected to the computer.

Students can subscribe to and use the iPod to listen to a wide range of podcasts available via the iTunes Store and Internet sites—including *The Princeton Review Vocabulary Minute*, foreign language lessons, the radio show *Science Friday*, and much more—a great way to enhance their learning across the curriculum. English language learners, students who struggle with reading and writing, students who need auditory and visual input simultaneously for learning to “stick”—these students will all be well served by an iPod. The iPod can be loaded with audio versions of your lectures, audiobooks, famous speeches, Keynote presentations to use for homework support or test review, and more.

With a small voice recorder connected to the iPod, students can record many types of audio files—for example, ELL students can record and play back English dialogue and students with literacy needs can record reading samples for assessment or reading practice or record notes if they have difficulty with written note-taking. Students can also view videos, photos, or presentation slides on an iPod that displays photos and video. The iPod also provides an easy way for students to take work home to review or to share their progress with their families.

## Learn More About iPod

### iPod

<http://www.apple.ca/education/products>

Information and resources for using iPod with students

### iPod Service and Support

[www.apple.ca/support/ipod](http://www.apple.ca/support/ipod)

Tutorials, articles, discussion boards, and more



# Connecting Learner Needs with the Built-in Tools on a Mac

Today's increasingly diverse student population requires educators to seek solutions that engage and support learners regardless of ability, disability, background, or learning style. With a Mac, educators have the power to provide a customized learning environment for any student.

The following vignettes provide examples of how you can use the Mac features, applications, and digital authoring tools to provide learning opportunities for everyone in the classroom—leveraging strengths and bypassing or alleviating challenges, so that learning differences can be addressed. Each vignette highlights a student with a different array of strengths and struggles and presents specific ideas for how that student's needs can be addressed with the tools described earlier in this guide. While no two students are alike, these vignettes can provide models that you can modify to meet the specific needs of your students.



## Helping Students Get Organized and Stay on Task

Many students who need help with task management and organization would do just fine in school if they had an administrative assistant, such as most successful business executives have. For these students, technology can provide backup support for some of those “executive-functioning” roles. Teachers and students can use Apple’s built-in technology features and applications to develop students’ task management and organizational skills.

### Student Profile: Brian

Brian struggles with organizing his work on paper. Although he understands advanced science concepts, he has difficulty taking organized notes on what is presented in class as well as explaining his lab results in writing. He complains that he can’t remember all the details, that he feels like his brain is running out of space. He also has trouble keeping track of his homework, often forgetting what the assignment is or losing it before it is submitted or turning it in late.

To help with his note-taking, Brian and his math partner, Max, share responsibility for typing class notes with a word-processing application, such as TextEdit or Pages. Brian frequently uses iChat to send files to and receive them from Max and to make sure his notes have the key points. With iChat text chats, Brian can communicate with other students while building his writing skills.

iMovie projects and audio podcasts give Brian an ideal way to express and share his understanding of science concepts. For instance, instead of writing out his solution on paper, Brian produces short movies with iMovie or podcasts recorded with GarageBand to demonstrate that week’s lab results. He adds these files to the class science blog created with iWeb.

For Brian, the key to managing his time and organizing his work is making use of the tools that bypass or strengthen his weaknesses. He subscribes to the class calendar in iCal so he knows what his assignments are and when they are due. He also uses the iCal To Do lists and alarms with his iCal calendar to help him keep on track. In addition to iCal, Brian has made the Countdown Plus widget an essential part of his routine, so that he know exactly how much time he has left for in-class assignments and long-term projects.

Brian’s teacher uses iWeb to post homework assignments on a class website, so Brian and his parents can both make sure he has everything that’s needed. Brian submits written work from home via email as soon as he completes it to better ensure that it will be handed in on time. To make it easier to locate and keep track of his work on the computer, Brian has organized a folder for each month’s work for each subject in the Documents folder. If he still has trouble locating a document or an image file, he knows he can quickly find it using Spotlight, the Mac OS X search technology.

## Supporting English Language Learners

In many classrooms across the country, teachers are working hard to support English language learners, as well as other students whose receptive and expressive language skills are not strong, even though English is their native language. Technology offers a variety of ways to compensate for language weaknesses as well as to strengthen those areas of need.

### Student Profile: Alicia



Alicia, an English language learner, struggles with speaking in English. Although her vocabulary is good and she finds it easy to memorize grammar rules and verb tenses, she finds it difficult to carry on a full conversation in English. She becomes an introvert in class to avoid being teased for her speaking ability. Her schoolwork is beginning to suffer as she becomes frustrated at not mastering English as quickly as some of her classmates. She is animated when speaking in Spanish, however, and is a good writer in Spanish.

One way that her teacher has Alicia build her spoken English skills is by using GarageBand to record herself reading; she practices verbal fluency a number of times with the same passage. She saves these recordings in iTunes so she and her teacher can see her improvement and takes them home on a CD to share with her family.

When she is writing in English, Alicia consults the Dictionary application and uses text-to-speech to hear the pronunciation of words with which she is unfamiliar. She also uses text-to-speech to hear web pages and other documents read aloud as she reads along. Alicia frequently checks the Translator widget to make sure she is using the correct English word. She sometimes uses International preferences in System Preferences to view the computer's menus and other onscreen elements in Spanish. Her teacher has suggested to Alicia that she complete some of her writing projects in Spanish, which has bolstered her self-esteem.

Because Alicia is an expert native Spanish speaker, her teacher has Alicia act as a partner to write and record dialogues in GarageBand and to create vocabulary books in iPhoto for her classmates to use to practice their Spanish. This helps Alicia maintain her heritage language proficiency and use her writing skills, while building her English skills. She has become more confident when she speaks in front of the class since the teacher has asked her to introduce the dialogue exercises and vocabulary books.

## Addressing Communication and Social Needs

Sometimes a student's social struggles are more significant than academic issues. For students who fear raising their hands and speaking in class, technology tools provide the privacy needed to express learning without fear of humiliation. Technology also gives such students a way to demonstrate what they've learned to the whole class without having the focus be on them. For example, sharing a movie or slideshow students created can help diffuse some of the attention on the speaker.

### Student Profile: Steve



Steve is a loner and feels isolated from his schoolmates. Mostly withdrawn in class, he hates being called on and misses school whenever he can. He also struggles with written language—mostly spelling and grammar. He has wonderful ideas but fear of spelling mistakes means he uses words that are simpler than the ideas he has to express. He reads slowly, but understands and remembers everything he studies. Steve is creative; his teacher knows that he writes and plays music out of school and loves to draw.

To strengthen his written work, Steve uses TextEdit with its spelling checker and word completion feature to give him suggestions for spelling words he isn't sure of. He uses text-to-speech to hear his work read back to him and check for grammar mistakes. He also uses Dictionary, which is much easier and faster than looking up words in the hard-copy dictionary, and using the thesaurus in Dictionary helps him build his vocabulary.

Steve's engagement with the class has improved immeasurably since his teachers have encouraged him to use his artistic gifts to demonstrate what he has learned. He uses GarageBand to compose and record songs that express the themes of the novels the class is reading; these compositions are then used as background music for slideshows the class produces about the novels with iPhoto.

In history, he produces documentaries and video podcasts with iMovie as an alternative to research papers. These productions are the envy of his classmates. He combines scanned images of his artwork with photos and video clips he's taken, and then he adds music that he records in GarageBand. Script writing comes easily to him and has improved his writing skills. In addition to sharing the movies and podcasts with the class, the teacher uses iWeb to post them on a class website so that Steve can share them with his family.

## Addressing Memory and Attention Problems

For many students, trying to keep up with all the information that is presented in class is like trying to do a thousand-piece puzzle on a tabletop that is too small—like pieces that keep falling off the edge, information just seems to slip away. When the stress of falling behind gets too great, some students tune out or shut down, almost like an overloaded circuit breaker. Computers offer students a place to store what they need to remember and retrieve it when it is needed.

### Student Profile: Jeff



Jeff has a hard time maintaining his focus in his algebra class. Mastering math is complicated by his difficulties with memory and attention. Jeff can concentrate on puzzles and video games for hours, but finds it almost impossible to follow the steps as his teacher writes them on the board. He says his teacher goes too fast for him to grasp the big ideas; he is still trying to understand the steps in factoring polynomials while his teacher has gone on to graphing and interpreting equations. Sometimes he just tunes out the class altogether, figuring he'll never catch up.

Jeff's teacher uses iMovie and GarageBand to create movies and podcasts that present the steps in solving problems. Jeff reviews these at home to help him remember what was said. Knowing that he can listen to and watch the lectures at home and replay them as often as he wants relieves the pressure of trying to understand and take notes at the same time.

When he does his math homework, Jeff enters data with Calculator and has the computer read aloud both the numbers he enters and the results. Using technology helps Jeff maintain his attention and takes some of the drudgery out of computation.

For an end-of-unit project, Jeff works in a small group to create a movie study guide. Jeff's group uses Grapher to produce short animations to show how numbers relate to each other with two- and three-dimensional graphs. They export those animations to the group's iMovie project where they add text, additional images, and narration to explain each equation. Jeff is a valued member of the group, and finds that making movies is so exciting for him that he can focus on creating the animations and editing the movie for long periods of time.

## Increasing Literacy Skills

Students who struggle with any of the communication skills have difficulty letting their teachers know how much they've learned as well as with understanding what is presented, even if they have no difficulty understanding big ideas. Technology tools can help students develop their literacy skills while they gain understanding and let their teachers see their mastery.

### Student Profile: Lindsey



Although she's a gifted photographer and has excellent math skills, Lindsey reads below grade level, and she sometimes has trouble understanding what she's read. She reads very slowly, and it's hard for her to sort out what is the most important point and what are the details. She finds it difficult to express herself verbally and so avoids being called on when students take turns reading in class.

Lindsey's teacher makes sure that some of the novels the class reads are available to download from the iTunes Store. In this way, while Lindsey is reading the book, she can also hear the text read aloud on a computer with iTunes or on an iPod.

For short reading assignments, Lindsey's teacher uses GarageBand to record herself reading a story. She then posts these audio files as well as text files of the story to a shared folder on a server so that students can review them from any computer on the school network. Lindsey opens the text files with TextEdit and uses the Summarize feature to help her understand the key points of the assignment. While she listens to the audio files, she reads along to practice her decoding and build up her speed.

When she uses the Internet, text-to-speech helps her understand the content and answer questions more quickly. She frequently checks the meaning of words using Dictionary and hears entries read aloud.

Lindsey's teacher has excused her from reading passages aloud in class for now; as an alternative, Lindsey uses GarageBand to record herself reading passages assigned by the teacher, who saves them for assessment. Since Lindsey has started doing this on a regular basis, she has acquired a greater facility with reading aloud. Lindsey then combines these recordings with photos she's taken to produce iPhoto slideshows to share with the class about the book they are reading.

## Addressing Physical and Motor Difficulties

The Universal Access features built into the Mac are essential for students with physical disabilities, but they are also helpful for those who struggle with handwriting or those whose fine motor skills make the traditional use of the keyboard and mouse more difficult.

### Student Profile: Bodhi



Bodhi was born with cerebral palsy and has limited use of his left side. He reads at grade level and has many friends in the class. He also has a remarkable collection of jazz music that he keeps track of with iTunes. Having his music on his Mac makes it easy for him to play any selection he wants because his fine motor difficulty is addressed by the accessibility features of the computer.

Bodhi has configured his computer with Universal Access settings so that operations that might be difficult with his physical limitations are accommodated. He controls the mouse with Mouse Keys keys and uses Sticky Keys to press modifier keys as a sequence and to eliminate the repeat key function. Bodhi has turned on Slow Keys to slow down the computer's response when he presses a key, which has made him more relaxed at the keyboard. He uses Speech Recognition to minimize the motor sequences needed to operate the computer and navigate among applications.

Bodhi enjoys collaborating with his classmates in video conferences using the built-in iSight camera on his MacBook and iChat. Bodhi's class is working with classes in other regions of the United States to collect data on geography and climate. Bodhi uses the iChat recording features to save the content so he doesn't have to worry about taking notes while he's talking.

Bodhi's teacher has assigned note-takers for each lecture who type the notes with TextEdit. Each student in the class is a note-taker at least once each semester. The teacher posts the notes on the class website she created with iWeb. In this way, Bodhi makes sure he gets the class notes since he's not the fastest typist in the class. (Other students in the class also appreciate having the notes available on the Internet.) The class note-takers supplement their notes with photos or drawings of the diagrams the teacher uses in class.

Bodhi is able to really show his talents when he collaborates on group iMovie movies and video podcasts that the teacher offers as alternatives to written assignments. Bodhi often acts as the producer—making sure that everyone is doing their part and helping to resolve any problems that come up within the group. He contributes his ideas for the scripts, records the narration for the podcasts, and contributes music from his collection for the soundtracks.

## Supplementing Verbal Instruction with Visual Tools

Students with even mild hearing impairments may struggle in classrooms where teacher presentations and lectures dominate instruction. Other students may not process information effectively by listening, even though their hearing is just fine. Technology tools can help these students get the big ideas when teachers use a slideshow or movie to help students visualize the concept or skill. And when students are given an option to make a poster or capture video and create a movie with their narration, their mastery of ideas and processes becomes clearer.

### Student Profile: Belinda



Belinda has loved to draw since she was little, and she has always amazed her family and friends with her ability to represent what she sees. She was slow to learn to talk, though, and speaking has always been a trial—it's laborious and embarrassing for her to be called on to read in class. Her hearing loss was not diagnosed until she was in second grade.

Her teacher can see Belinda's engagement and understanding begin to blossom as long as Belinda is offered ways other than spoken words to express what she has learned. Belinda uses Keynote when she is asked to present to the class. She scans or takes photos of her drawings to include on the slides, and she feels more at ease speaking when she has Keynote presenter notes and the Presentation Display to accompany her slides. She also takes part in iChat text chats with her classmates, which allows her to discuss class projects readily.

Belinda's class is learning how to use iMovie, and they use subtitles or the text track in QuickTime Pro to caption their movies. The text track ensures that students with hearing losses don't miss any of the action or meaning. Sometimes the teacher turns the sound off, so all students get to experience what life is like for people who are hard of hearing like Belinda. Belinda enjoys working on the class movie projects—she contributes her original artwork, captures video with a camcorder, and takes part in the editing process.

Belinda wears headphones when she's using the computer so that she can freely adjust the volume settings and more readily focus without any noise distractions from the classroom. She also uses the Flash Screen feature in Universal Access Hearing preferences so that the computer flashes a visual alert, rather than playing a sound, when an onscreen alert appears.

## Helping with Handwriting and Retention Problems

Some students who have a difficult time taking notes in class or writing out assignments or papers may find that using a keyboard is more efficient. As such students do research using the Internet, they can get note-taking support by using technology. They can use text-to-speech to listen to web pages if reading fluency, comprehension, and speed are also problems. Teachers can use word-processing software to create templates that have preformatted headings and tables to help organize assignments on paper, allowing students to focus more on the content of the work rather than on trying to remember just how to do it. This also alleviates the struggle some students have with manipulating pen and pencil.



### Student Profile: Rafael

Rafael is a star on the school tennis team; the coach finds him focused and dedicated. If it weren't for sports, Rafael probably wouldn't come to school at all. He is disciplined about his fitness and gifted athletically, but he struggles to remember what he's read or learned in class. Even though his gross motor skills and coordination are first-rate, his fine-motor skills and handwriting are a huge problem. His coach has told him that even though he's the number one player on the tennis team, he has to bring up his grades in history and English to be eligible to play.

To help with history, his teacher puts her lectures into podcasts that she creates with GarageBand and then imports into iTunes; she's added some chants and music to help the memory challenges. Rafael downloads this material on an iPod and heads off for his daily five-mile run. The daily review has helped him feel more confident in class, and he seems to remember better when his feet are moving.

Rafael is working on his keyboarding skills, and he finds that it's much easier and faster to use a word-processing application to write his papers than to struggle with handwriting. When doing Internet research, he uses Safari and adds Sticky Notes available from the Services command to help him remember key points on web pages.

Rafael likes being able to add pictures to his writing assignments. He takes a digital camera with him everywhere to look for images and real-life scenes to complement his compositions. He then uses Pages layouts to produce papers that combine his text with his photos. He's proud to turn in such neat, organized, attractive papers. Suddenly, school's become more interesting, and Rafael's teachers see a real change in his motivation.

## Helping Students with Visual Impairments Get the Big Picture

Just as some students have trouble in classrooms where they have to be terrific listeners, other classrooms may pose challenges for those with visual impairments. Fortunately, students can use the features on the Mac to make sure they get to hear what others see—which can be important for students with low or no vision.

### Student Profile: Shandra



Shandra is legally blind, but she can see very large print, especially if it's white on black. She enjoys using the computer for her schoolwork and to create podcasts that combine music and narration.

Shandra has worked with her teacher to set up her computer with Universal Access preferences to meet her needs. She has changed the display to white text on a black background. She knows how to use the Zoom option to enlarge whatever is on the screen, and she sets the size of icons and their text labels with the View menu so that they're large enough for her to locate files without having to ask for help. She also has the time read aloud on the hour, which was set in the Clock pane of Date & Time preferences.

With VoiceOver, Shandra can work with a small group of students and hear what everyone else is seeing on the screen. It's best for her to use the keyboard to navigate instead of the mouse, and VoiceOver tells her exactly where she is and what the choices are for the computer. Since she does have some residual vision, she can use the onscreen pointer for some tasks, and she has used Mouse preferences to set the pointer size so it's large enough for her to see it easily. When she does research for her classes, she uses VoiceOver or text-to-speech to hear web pages read aloud.

Shandra's teacher has set up iCal so that it gives her auditory alarms to remind her of upcoming due dates and other events. The teacher records his lectures to the class with GarageBand as podcasts and posts the audio files on the class website (made with iWeb). Because Shandra knows she can listen to the lecture again at home, she's able to concentrate on the teacher's presentation, without worrying about taking notes. The teacher also puts all his Keynote presentations on the class website, so Shandra can view them at home using the Zoom feature. With her assignments under control, Shandra has time to produce podcasts after school with her friend Grace. They use GarageBand to create the podcasts and publish them to iTunes. The podcasts, which have become very popular at school, include reports on school events and commentary on world news, music, and interviews with classmates, teachers, and community members.

# Additional Resources

For resources specific to applications and features discussed in this guide, see the “Learn More” information in those sections. This section provides an overview of the collection of resources you can use to get more ideas about using Apple technology with diverse learners.

## **Apple Accessibility**

[www.apple.ca/accessibility](http://www.apple.ca/accessibility)

Since 1985, Apple has been committed to helping people with disabilities access their personal computers. Find specific hardware and software that meets your students’ needs.

## **Apple Learning Interchange**

[www.ali.apple.com](http://www.ali.apple.com)

Apple Learning Interchange (ALI) showcases best-practice teaching strategies that are rich with technology. The site includes a collection of educator-created lesson plans, digital learning events, and many other online learning opportunities. These resources are always available via the Internet free of charge, with new content being added all the time.

## **Apple Education**

- Mobile Learning  
[www.apple.ca/education/teachers-professors/mobile-learning.html](http://www.apple.ca/education/teachers-professors/mobile-learning.html)
- Digital Content Creation  
[www.apple.ca/education/teachers-professors/digital-content-creation.html](http://www.apple.ca/education/teachers-professors/digital-content-creation.html)
- Teaching with Mac OS X  
[www.apple.ca/education/teachers-professors/teaching-with-mac-osx.html](http://www.apple.ca/education/teachers-professors/teaching-with-mac-osx.html)
- iLife  
[www.apple.ca/ilife](http://www.apple.ca/ilife)
- iPhoto  
[www.apple.ca/iphoto](http://www.apple.ca/iphoto)
- iMovie  
[www.apple.ca/imovie](http://www.apple.ca/imovie)

- GarageBand  
[www.apple.ca/garageband](http://www.apple.ca/garageband)
- iWeb  
[www.apple.ca/iweb](http://www.apple.ca/iweb)
- iWork  
[www.apple.ca/iwork](http://www.apple.ca/iwork)
- Keynote  
[www.apple.ca/keynote](http://www.apple.ca/keynote)
- Pages  
[www.apple.ca/pages](http://www.apple.ca/pages)
- Numbers  
[www.apple.ca/numbers](http://www.apple.ca/numbers)

### **Apple Professional Development**

[www.apple.ca/education/apd](http://www.apple.ca/education/apd)

Apple Professional Development offers a wide array of workshops to help educators effectively infuse technology into the classroom. A two-day workshop can help you learn how to apply unique Mac OS X features, applications, and digital tools to enhance learning for students with diverse learning needs.

### **Apple Support**

[www.apple.ca/support](http://www.apple.ca/support)

The Apple Support website provides a comprehensive collection of tutorials, answers to troubleshooting questions, discussion boards, software updates, product specifications, tips, and more.



## Learn more.

To learn more about Apple products and solutions for education, visit [www.apple.ca/education](http://www.apple.ca/education).