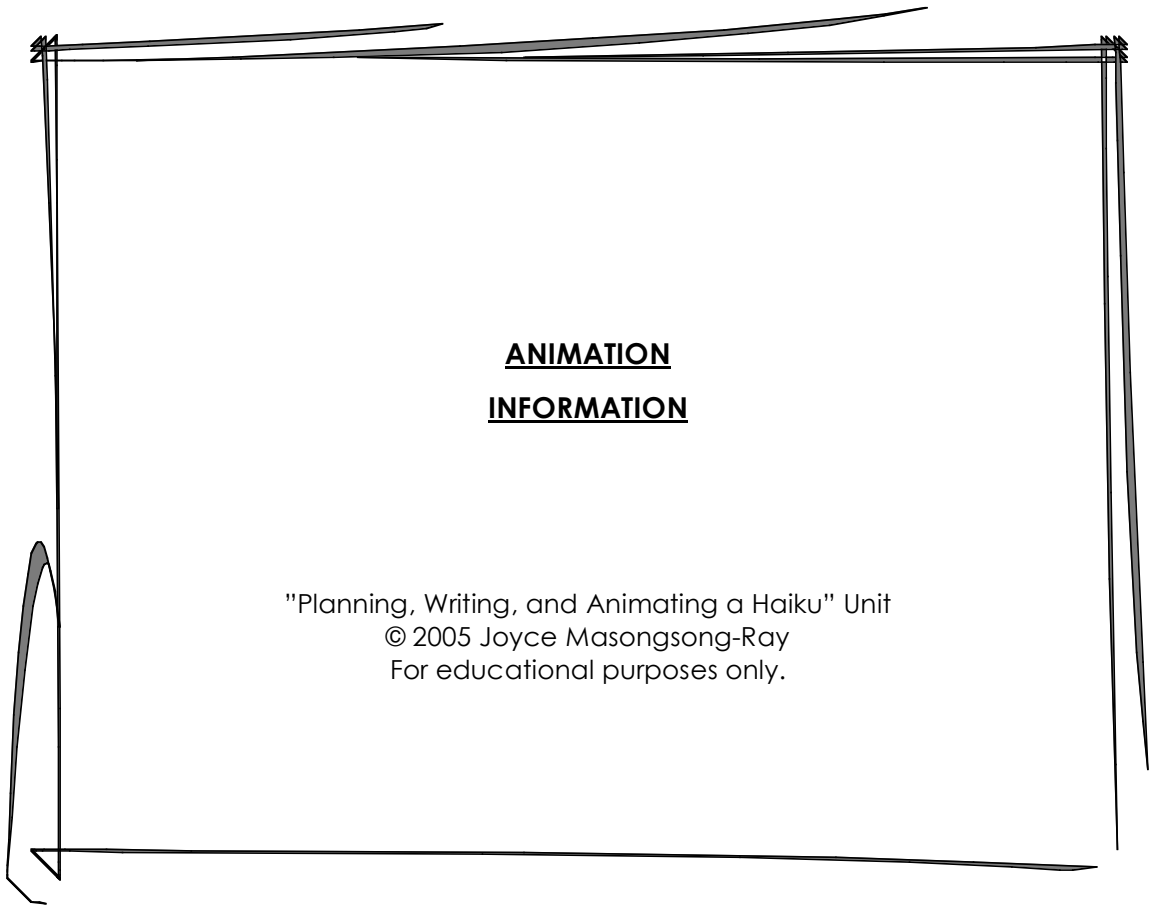


ANIMATION

INFORMATION

"Planning, Writing, and Animating a Haiku" Unit

TEACHER KNOWLEDGE:

In order to do this unit, there is a bit of teacher planning and post-production that needs to take place. How much time? Well, that depends on how comfortable you are using and setting up the equipment and how much you really want to edit together your students' work. However, your students' engagement, effort, and elation at watching their finished movie are well worth it. You are also going to need to manage the class wisely; while some teams are animating, others should be busy with appropriate activities such as writing in their journals or reading. You will also need to offer tech support to the animating teams, so be aware!

For this lesson, it is assumed that the teacher knows basic **iMovie** – importing clips and audio, adding chapters, and sharing the movie to iDVD. For **iMovie** help and tutorials, see http://www.mac.com/1/learningcenter/ .

SETTING UP:

The more animation stations you have, the merrier. Every station needs:

- **A Mac computer with OSX**
- **Digital video (DV) camera** (or **iSight webcam**[1] with Firewire connection to your computer)
- **Tripod** or other mounting device for your camera
- **iMovie**, and **iDVD** (available on most newer eMacs and iBooks. If not, see the iLife package at www.apple.com)
- **iStopmotion 1.8** – www.istopmotion.com

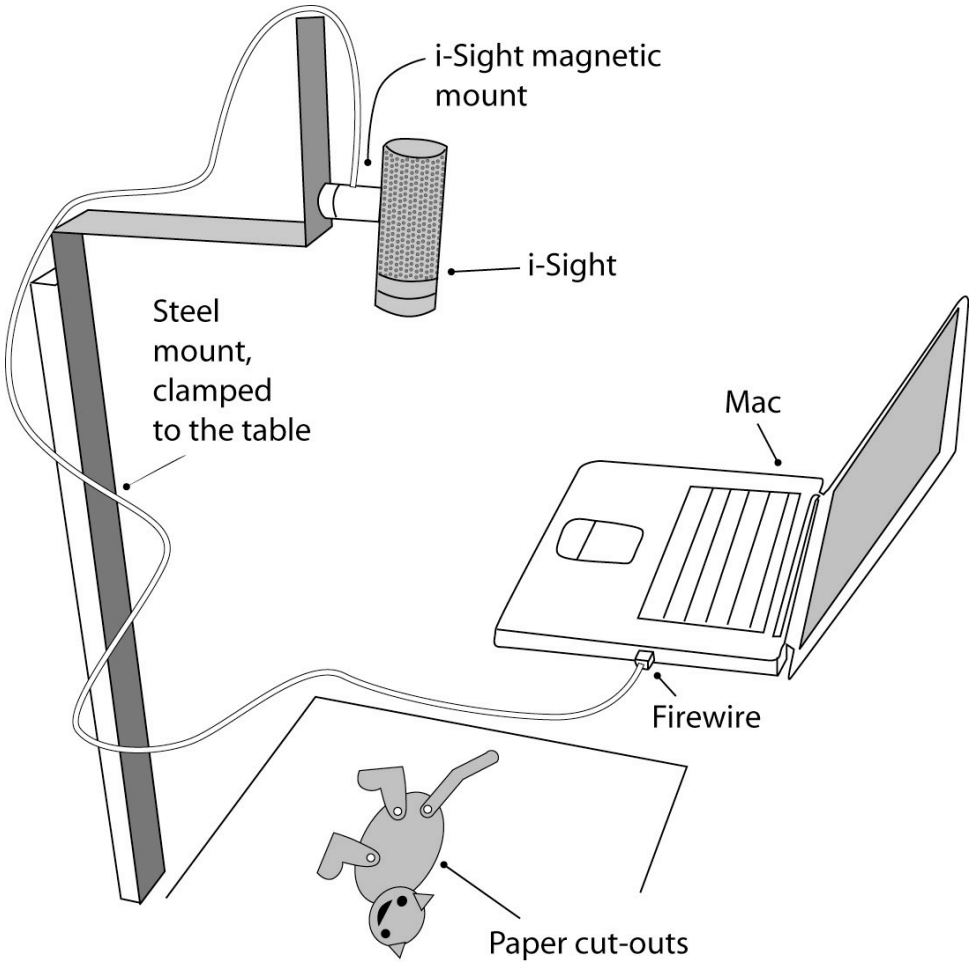
Boinx is the company that makes iStopmotion. You can download iStopmotion online at www.istopmotion.com . They have a free one-week trial version or you can purchase the regular DV license for $39.95. You basically fill out the online form to request a license key. Then, Boinx emails it to you (rather quickly, within a

[1] iSights work fine. However, remember the pixel resolution for the iSight is 640 x 480 while your DV camera is 720 x 486 (better resolution). Also, iSights tend to auto-focus. You need to set your camera's focus "Manual" in i-Stopmotion: Movie → Video Settings → Adjustments -> Mechanics.

few minutes). Follow the directions on the email and you'll do just fine. Just a word of advice, I recommend you talk to your school's IT Administrator before installing software on school computers. It couldn't hurt!

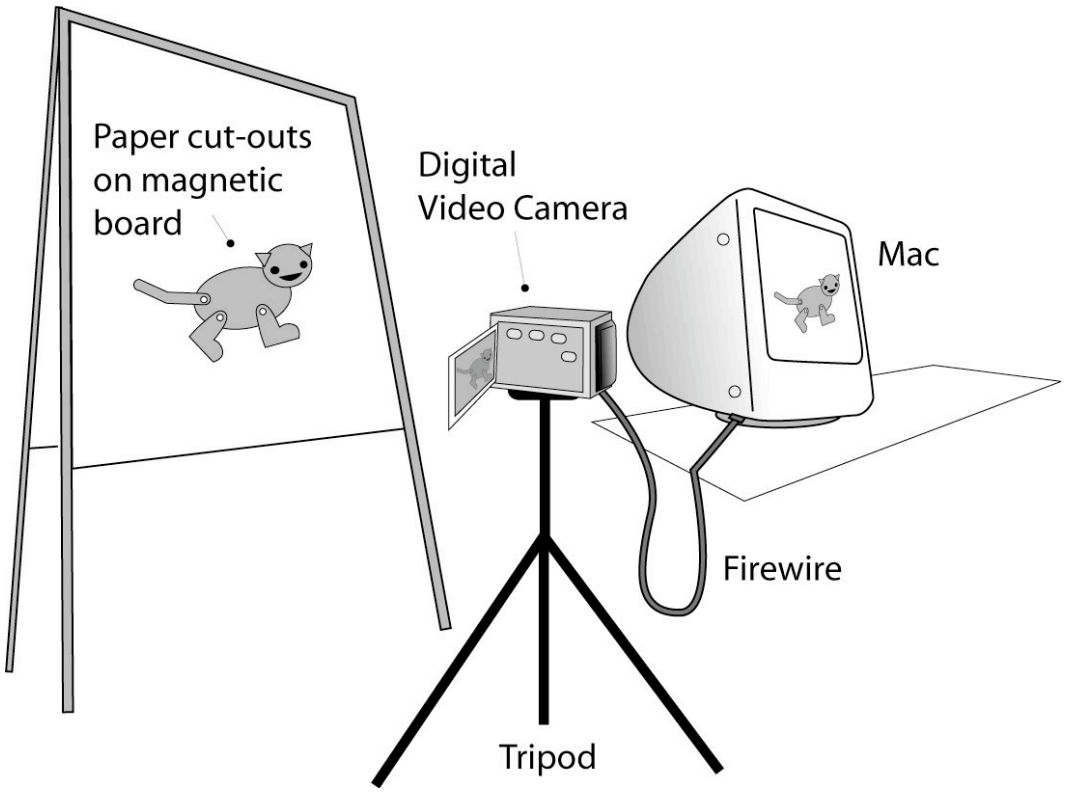
Once you have iStopmotion, please read their help guide/tutorials at http://help.istopmotion.com/ . Unless you bought the $349 professional version, some of the features on the tutorial might not be available to you. Not to worry because the regular DV license will do the job.

You will also need to budget in time to set up the cameras and pack them up at the end of the day. Here is what a set-up using an i-Sight mounted facing downward looks like:



If you don't have a steel mount, you can make one out of a steel bar from the hardware store. Just bend it at right angles and clamp to the table. If you can't make yourself a steel mount, i-Sight comes with other mounting devices.

The other way you can shoot is with a DV camera. Some tripods will let you point the camera downwards at 90 degrees (so you can film paper on a table top). Otherwise, you will have to shoot straight ahead. This is great for animating items on a chalkboard or attached by magnets to a magnetic board. Here's what a set-up using a DV camera on a tripod looks like:



You will need to plan accordingly as to how you will make multiple animation stations fit in your classroom. Be explicit with your students: please treat the expensive equipment professionally!

BASIC THINGS ABOUT ANIMATION:

Timing:

Animation, like film, is a series of pictures that when played, gives the viewer a perception of motion[2]. If you have ever seen a film reel, you will notice that there are a lot of frames. To be exact, there are 24 frames per second (fps) in film and 29.97 fps in video. That means in film, it takes 24 pictures to make one second of animation**.** Luckily, the human eye can see **12 frames per second** just as smoothly as 24 fps. Animators will refer to this as "shooting on twos." To be efficient with time, your students will be shooting at **12 fps -** 12 pictures for every (1) second of animation.

12 fps is a hard concept for many elementary-age children to comprehend. One problem you will face is that the student's animation will play too fast –s/he has shot too few pictures. This can be prevented if the student first estimates his/her time using a stopwatch; the student either recites the audio or acts out the motion to get a ballpark estimate. The student then uses this time to plot out how many frames s/he will need. (For example, if s/he thinks the action will take 5 seconds, then 5 seconds x 12 frames per second = 60 frames. The student needs to take 60 pictures for 5 seconds of animation).

Another thing to remind students is to count how long it takes to read information. If the student animates something for the viewer to read, such as a title slate and credits, then that shot should be held for at least 4 seconds, giving the viewer enough time to read the information.

Here's some general **timing guidelines:**

- Shoot at **12 frames per second.**

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[2] For interesting examples of frames in motion, see the photography of Eadweard Muybridge. The University of California – Riverside has a great online gallery at http://photo.ucr.edu/photographers/muybridge/contents.html# .

- **The very first** and **very last pictures should be at least 2 seconds each.** The viewer needs that time to first comprehend what s/he is looking at. The last shot is what you are leaving the viewer with, and those two seconds help the viewer reflect upon what s/he has watched.

- Any information that needs to be **read** such as **title slate and credits** should be at least **4 seconds long**.

- Depending on how well teams work together and how elaborate the director's animation props are, a 20 second animation (including 12 seconds of title, credit, and poetry slates) it is fair to budget **30 to 35 minutes per student for animating time**. The simpler the set-up, the better. You might want to encourage your students to plan ahead and experiment with how much time s/he will need for many moving parts before s/he animates!

- You can edit by cutting and pasting frames in i-Stopmotion. However, what you really want is for your students to do it right the first time or for them to do the editing themselves.

Video Jargon:

- **Frame Rate:** Speed of frames per second (fps). Common frame rates: film = 24 fps, video = 29.97 fps
- **DV:** Digital Video
- **Mini-DV:** the little video tape in a digital video camera
- **NTSC:** the television video standard for the United States. Europe uses PAL. NTSC stands for National Television System Committee.
- **Pixel Resolution:** The pixel resolution for NTSC DV (our television) is 720 x 480. Other common pixel aspect ratios you will see are: 640 x 480 for the i-Sight and 320 x 240 for smaller web movies. What does this mean? This means that a 640 x 480 movie shot with an i-Sight will appear slightly

grainy on a television because it has been adjusted to fit the 720 x 480 screen.

- **Frame Aspect Ratio:** Television is 4:3 (four units by 3 units). Widescreen is 16:9.
- **Pixel Aspect Ratio:** Television is 1:33 (1.33 times wider than it is high). Widescreen is 1:78.

Three heads are better than one:

Your students will be animating in teams of at least (3) people. You can observe student social behavior when s/he works with others. It is just more efficient for the students to work this way since they will have three times the animating experience (by working on other people's movies). Explain to your students that animation takes a long time to do. If they have ever watched the credits to their favorite cartoon, they will notice a lot of people worked on it.

The job for the team members are:

Director: This is usually the writer/owner of the movie. The director calls the shots and tells the other members what needs to be done.

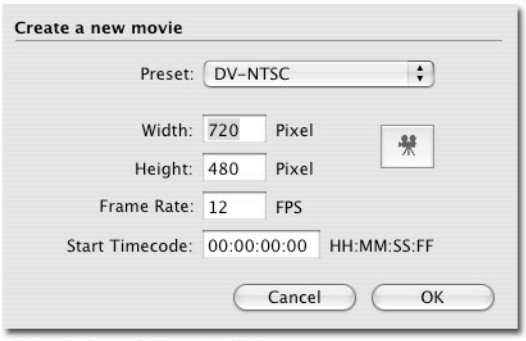
Camera: The person who takes the pictures. The cameraperson should make sure there are no hands in the shot before taking the picture. S/he deletes frames that didn't come out right and takes the picture again.

Animator(s): The people who set up the props and move them each time.

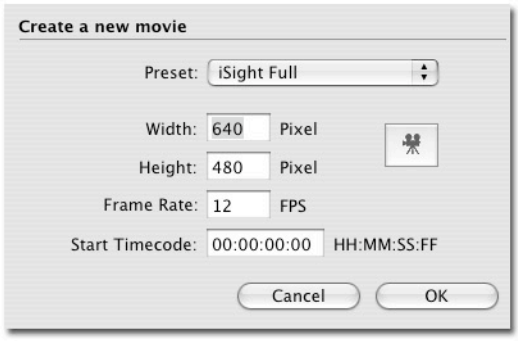
USING I-STOPMOTION

Once you've got your camera hooked up to the computer and your animation props are in place, it's time to animate!

Open iStopmotion. You will see a "create new movie" window. Set yours to look like this:

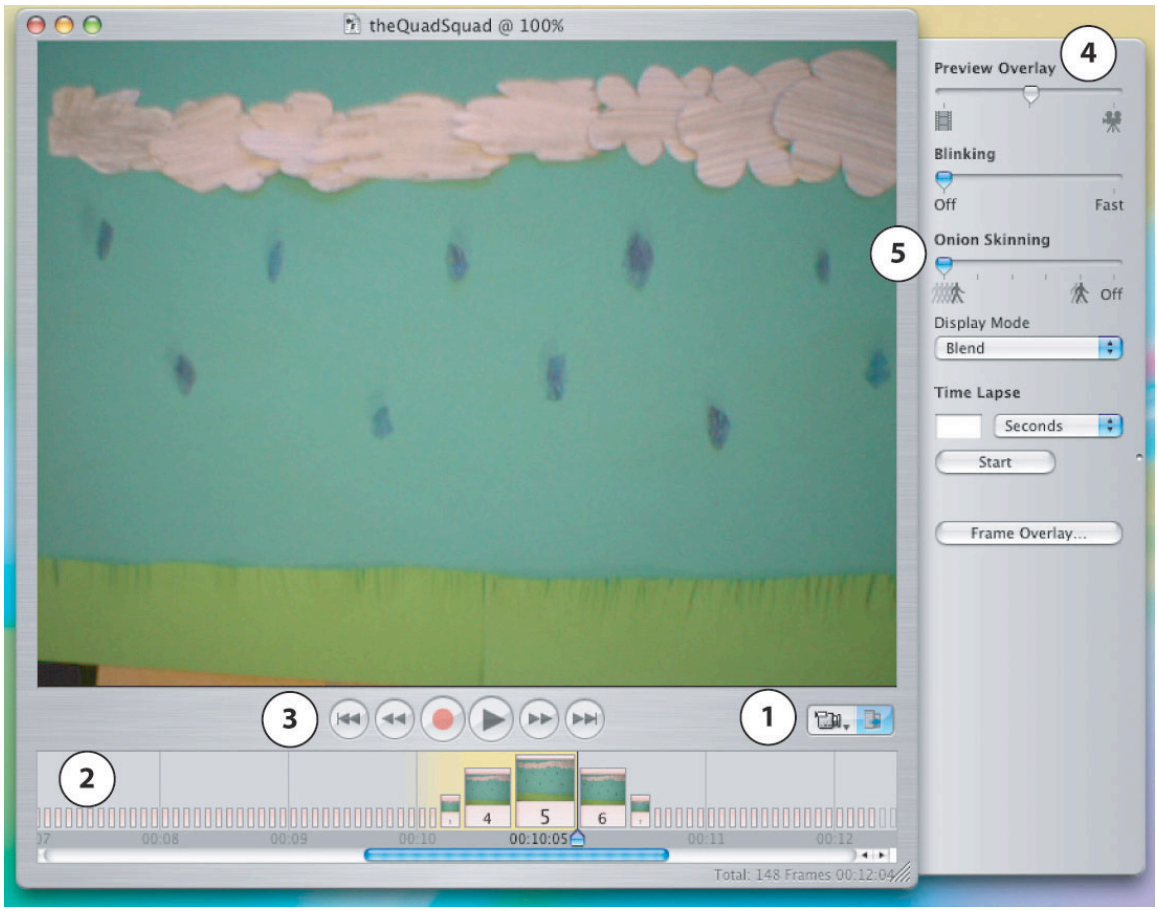


Use this setting for DV camera.
NTSC is the American TV standard.
PAL is the European TV standard.



Use this setting for i-Sight. Make sure your frame rate is 12 FPS!

The main features about the iStopmotion window:



#1: You should be able to see what's on your camera in the window. If you see black or green, that means your camera is probably off or disconnected. Go to the icon at #1 and click to choose your camera.

#2: This is your **timeline**. It tells you how many frames you have taken and at what second you are at (every | is a second. Every little box is a frame). The nice thing about version 1.8 is that you can see a little thumbnail of your frames in each frame box.

#3: Controls. Remember to press the red button to record. In order to take pictures, click your mouse or press the space bar on your keyboard. Or, press your 2 key to take 2 pictures at one time, 3 for 3 pictures, and 4 for 4 pictures. (If your computer does not do this, go to iStopmotion → Preferences → Shortcuts to

set it up). To play a preview of your movie thus far, press the play button.

#4: Preview Overlay. Slide the arrow to view only your movie or only your camera. Slide the arrow to go in-between the two in order to see a blend between what's on your camera now and your last shots.

#5: Onion Skinning. This is a good feature to have ON. (You can't turn it on until you've already started recording). Onion skinning makes a "ghosted" image of your past few frames. This helps you to see the path of your object so you can plan where you need it to go.

Save often as accidents do happen. When you are done animating, you should go to File → Export to DV. This will export your file to digital video (DV NTSC) quality. Or, File → Export to Quicktime to change your settings.

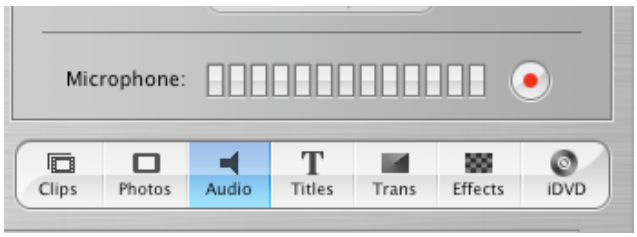
<u>A note about opening iStopmotion files:</u>
Open your previously worked on files directly in iStopmotion. File → Open. Do NOT double-click on your file in your Finder. Doing so sometimes does quirky things to your file.

AUDIO

Ideally, your students should recite their own dialogue or play their own music. iSights double as a microphone that can record audio in iMovie.

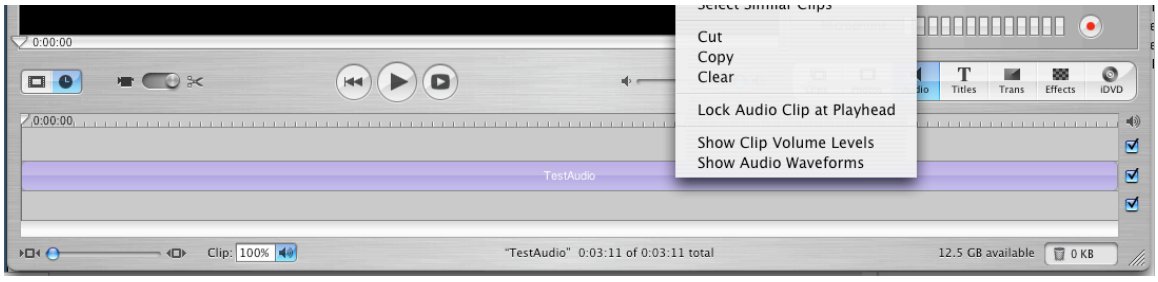
1. Open iMovie.

2. Click Audio.



3. If you have an internal microphone, iSight, or other microphone plugged into your computer, you can press the record button  and start talking! You want to keep your levels  in the green or yellow. This means that the audio is at safe levels. Audio in the red is too loud.

4. Click the record button  again to stop recording.

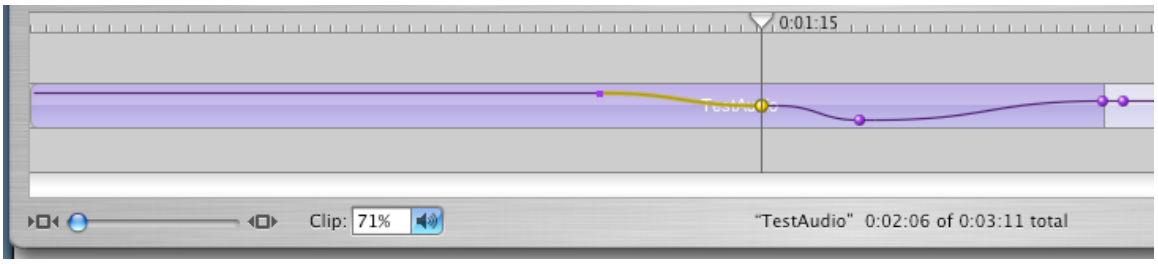


5. You should have an audio track now named Voice 01. Click play to hear. Click on the track to rename it (in the above picture, my track is renamed "TestAudio"). With your track selected, at the bottom of iMovie, you can

see the time length of your track.

6. Control+click (or left+click) on the track. You can choose "Show Clip Volume Levels" or "Show Audio Waveform".

7. Showing the **waveform** shows you where your actual recording starts and stops. This can help you if you want to cut your track exactly where the audio starts. Cut by selecting the track then lining the playhead where you want to cut. Next, hit Command + T or go to Edit -> "Split Selected Audio at Playhead".
8. Showing the **volume levels** will enable you to edit the volume. Simply click onto the level to make a key and drag the level up and down. You can also change the audio level percentage at the bottom "Clip:" box.



9. Save your iMovie file. Later on, you can import your animation .dv or .mov file into this file and match it up with your audio!

Other audio options:

- Import .aif files from a CD into iTunes. (Check your district's policy on "Fair Use" before using copyrighted material in your movie – Ann Arbor Public Schools - http://ectc.aaps.k12.mi.us/).

- Choose generic music loops or make your own music from Garage Band and export them out into iTunes.

Audio in iTunes can easily be imported into iMovie.

TECHNOLOGY & LEARNING

Copyright and Fair Use Guidelines for Teachers

This chart was designed to inform teachers of what they may do under the law. Feel free to make copies for teachers in your school or district, or download a PDF version at **www.techlearning.com**. More detailed information about fair use guidelines and copyright resources is available at **www.halldavidson.net.**

Medium	Specifics	What you can do	The Fine Print
Printed Material (short)	• Poem less than 250 words; 250-word excerpt of poem greater than 250 words • Articles, stories, or essays less than 2,500 words • Excerpt from a longer work (10 percent of work or 1,000 words, whichever is less) • One chart, picture, diagram, or cartoon per book or per periodical issue • Two pages (maximum) from an illustrated work less than 2,500 words, e.g., a children's book	• Teachers may make multiple copies for classroom use, and incorporate into multimedia for teaching classes. • Students may incorporate text into multimedia projects.	• Copies may be made only from legally acquired originals. • Only one copy allowed per student. • Teachers may make copies in nine instances per class per term. • Usage must be "at the instance and inspiration of a single teacher," i.e., not a directive from the district. • Don't create anthologies. • "Consumables," such as workbooks, may not be copied.
Printed Material (archives)	• An entire work • Portions of a work • A work in which the existing format has become obsolete, e.g., a document stored on a Wang computer	• A librarian may make up to three copies "solely for the purpose of replacement of a copy that is damaged, deteriorating, lost, or stolen."	• Copies must contain copyright information. • Archiving rights are designed to allow libraries to share with other libraries one-of-a-kind and out-of-print books.
Illustrations and Photographs	• Photograph • Illustration • Collections of photographs • Collections of illustrations	• Single works may be used in their entirety, but no more than five images by a single artist or photographer may be used. • From a collection, not more than 15 images or 10 percent (whichever is less) may be used.	• Although older illustrations may be in the public domain and don't need permission to be used, sometimes they're part of a copyright collection. Copyright ownership information is available at **www.loc.gov** or **www.mpa.org**.
Video (for viewing)	• Videotapes (purchased) • Videotapes (rented) • DVDs • Laserdiscs	• Teachers may use these materials in the classroom. • Copies may be made for archival purposes or to replace lost, damaged, or stolen copies.	• The material must be legitimately acquired. • Material must be used in a classroom or nonprofit environment "dedicated to face-to-face instruction." • Use should be instructional, not for entertainment or reward. • Copying OK only if replacements are

			unavailable at a fair price or in a viable format.
Video (for integration into multimedia or video projects)	• Videotapes • DVDs • Laserdiscs • Multimedia encyclopedias • QuickTime Movies • Video clips from the Internet	• Students "may use portions of lawfully acquired copyright works in their academic multimedia," defined as 10 percent or three minutes (whichever is less) of "motion media."	• The material must be legitimately acquired: a legal copy (not bootleg) or home recording. • Copyright works included in multimedia projects must give proper attribution to copyright holder.
Music (for integration into multimedia or video projects)	• Records • Cassette tapes • CDs • Audio clips on the Web	• Up to 10 percent of a copyright musical composition may be reproduced, performed, and displayed as part of a multimedia program produced by an educator or students.	• A maximum of 30 seconds per musical composition may be used. • Multimedia program must have an educational purpose.
Computer Software	• Software (purchased) • Software (licensed)	• Library may lend software to patrons. • Software may be installed on multiple machines, and distributed to users via a network. • Software may be installed at home and at school. • Libraries may make copies for archival use or to replace lost, damaged, or stolen copies if software is unavailable at a fair price or in a viable format.	• Only one machine at a time may use the program. • The number of simultaneous users must not exceed the number of licenses; and the number of machines being used must never exceed the number licensed. A network license may be required for multiple users. • Take aggressive action to monitor that copying is not taking place (unless for archival purposes).
Internet	• Internet connections • World Wide Web	• Images may be downloaded for student projects and teacher lessons. • Sound files and video may be downloaded for use in multimedia projects (see portion restrictions above).	• Resources from the Web may not be reposted onto the Internet without permission. However, links to legitimate resources can be posted. • Any resources you download must have been legitimately acquired by the Web site.
Television	• Broadcast (e.g., ABC, NBC, CBS, UPN, PBS, and local stations) • Cable (e.g., CNN, MTV, HBO) • Videotapes made of broadcast and cable TV programs	• Broadcasts or tapes made from broadcast may be used for instruction. • Cable channel programs may be used with permission. Many programs may be retained by teachers for years—see Cable in the Classroom (**www.ciconline.org**) for details.	• Schools are allowed to retain broadcast tapes for a minimum of 10 school days. (Enlightened rights holders, such as PBS's *Reading Rainbow*, allow for much more.) • Cable programs are technically not covered by the same guidelines as broadcast television.

Sources: United States Copyright Office *Circular 21*; Sections 107, 108, and 110 of the Copyright Act (1976) and subsequent amendments, including the Digital Millennium Copyright Act; *Fair Use Guidelines for Educational Multimedia*; cable systems (and their associations); and *Copyright Policy and Guidelines for California's School Districts*, California Department of Education.
Note: Representatives of the institutions and associations who helped to draw up many of the above guidelines wrote a letter to Congress dated March 19, 1976, stating: "There may be instances in which copying that does not fall within the guidelines stated [above] may nonetheless be permitted under the criterion of fair use."