



## Video with Pinnacle Studio:

KTLC '05

Jeffrey L. Jones

[jjones@fayette.k12.ky.us](mailto:jjones@fayette.k12.ky.us)

<http://teach.fcps.net/trt15>

# Getting Started

## I. What do I need to edit digital video?

- A computer. According to Pinnacle (as of 3/2005), the minimum system requirements include: Pentium/AMD 800 or compatible PC or better with USB, 256 MB RAM, DirectX compatible graphics and sound card, DirectX compatible sound card, Windows 98SE or above, 500MB free disk space required to install software, 200 meg per minute of finished video.

**Having said that** - you won't be happy with a computer with the minimum requirements. Pinnacle recommends at least a 1.5 GHz Pentium, and, if at all possible, have 512 megs RAM. Older hard drives don't have a fast enough transfer rate to capture at the best quality, and if you intend to burn to DVD, be sure to check the Pinnacle website for drive compatibilities.

- Pinnacle Systems Studio (software only), or Studio AV/DV (includes IEEE1394 - so-called "Firewire" - and analog capture card, plus Studio software). If your computer already has a Firewire connection, or if both your camcorder and computer are USB 2.0 compliant, you only need the software. A demo of the software is available for free on CD from [Pinnacle Systems](#).
- A digital camcorder. If you buy AV/DV, an analog camcorder will work, but you'll lose the convenience and high quality of digital.



You can purchase the computer and capture system together and factory-supported from the **Accent Computers** KETS purchase spreadsheet, though separately they're cheaper.

## II. How do I install Pinnacle Studio?

The installation is pretty effortless, but four things you need to watch for - especially with XP/W2000:

1. Make sure you do a custom install, and make sure that the "SmartSounds" music files are checked to be included with the installation - if not, you'll be prompted for the installation CD every time you attempt to use SmartSounds.
2. The content CD is actually a DVD, so you'll need a DVD drive to finish that part of the installation (it's optional - the software runs fine without it).
3. Make sure that everyone using Studio on the computer is at least a local "Power user" - see your local tech support person if you're not sure.
4. If you have any problems after installation, make sure DirectX is at least Version 9, and that the video and audio cards (if separate)

have the latest drivers.

### III. How do I hook it all up?

In contrast to the wonderful world of analog capture, the Firewire interface handles video and audio, as well as camcorder controls. Hence you won't have to unplug your speakers to shoot to tape! Life is good!

# Capture

## I. Settings

*miniCD camcorder users:* you can simply transfer your video files as data using your CDROM drive, and skip this page!

There are three categories for digital capture: full quality, MPEG quality, and preview quality. Here's a chart with the trade-offs:



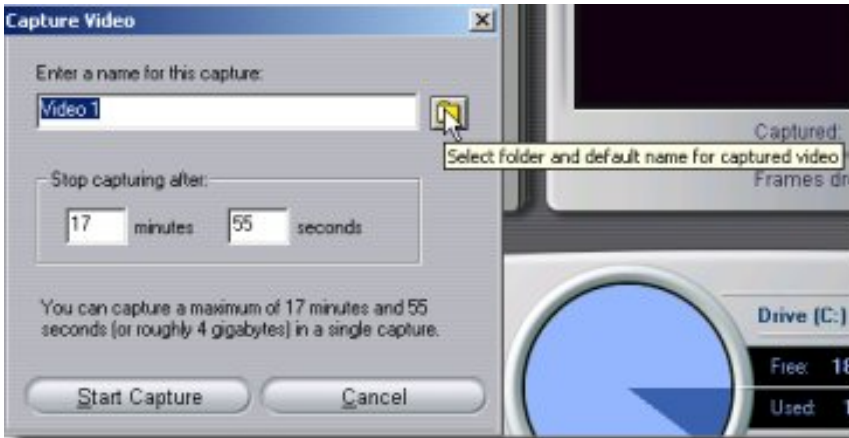
<b><i>Full Quality</i></b>	<b><i>MPEG quality</i></b>	<b><i>Preview quality</i></b>
captured files are uncompressed AVI format (full quality)	captured files are compressed (slightly lower quality)	captured files are compressed (much lower quality)
Uses the most hard drive space	Uses less hard drive space	Uses the least hard drive space
Final project can be produced with the computer alone.	Final project can be produced with the computer alone.	Full-quality final project requires the camcorder and original tape to be connected during rendering.
Best overall, if you have the drive space.	Very little loss in quality, but computer must do a lot of processing - more lockups and crashes.	Fine for quick projects or when storage space is limited, but final rendering requires the camcorder with the original tape to be connected, and takes longer.

The initial screen shows available disk space. If it's below 20% or so, think about cleaning things out. The less the space, the slower things run! Also, *defrag regularly!*


## II. Capturing

With "Firewire"-based systems (IEEE 1394), all camcorder controls are right there on the screen, so capture is a breeze. Hook up the camcorder to the Firewire cable, and turn it on to VCR. Play the video tape you intend to capture. It should show in the screen in the upper right hand corner. You will *not* hear sound - but not to fear, it'll be captured anyway! (Use the camcorder playback display to hear sound.)

It's best to capture scene by scene, creating new files for each. It's also a good idea to set a file location for all of the captures which is unique to the project - on your first capture, click on the folder icon and create a new folder. Capture about 5 seconds of "pad" before and after each scene - this isn't the time to be exact, and



you'll need the extra seconds later. Enter a filename. If you call your first scene "Scene 1" (with a space between "Scene" and "1"), it'll automatically call your second capture "Scene 2". Remember that the Studio default file location is whatever was used last, so if someone else uses the machine in between capture sessions, you'll need to reset the file location.

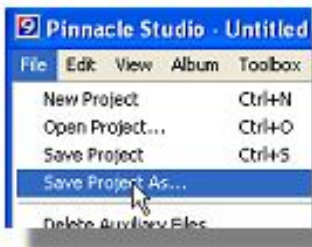
- Using the camcorder controls in Studio, locate a spot well before the scene you intend to capture, and stop.
- Click the  button.

"Start Capture" button.

- Choose your file location and name (see above).
- Click "Play".
- Click "Start Capture"
- Capture well past the scene's end, and click "Stop capture" (that button will be where "Start Capture" was to start with). Studio will automatically detect scenes within each capture, and show each as separate parts of a captured file.
- Repeat for each scene. If you see any dropped frames in the view window (just below and to the right) after a capture, give it another try for that scene.






## Editing



Before you go any further, go to "File/Save as..." and save your project in the same location as your scene clips. Since video editing is a resources-hungry process, you *will* face lockups and other problems. "Save early and often" was never more important!

You have three editing views, clickable on the middle/far right of the main window:

	<b>Storyboard:</b> The scenes are arranged in sequence, and there's no representation of time.
	<b>Timeline:</b> Time is represented graphically, so shorter scenes occupy less space.
	<b>Text:</b> This gives a simple list of the components of your project.

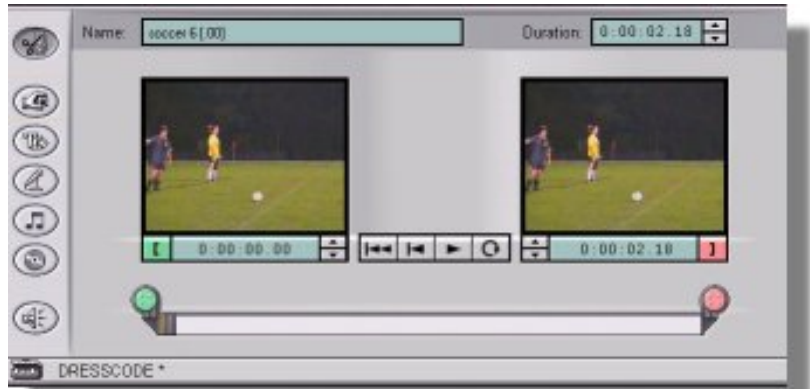
Storyboard is easier for rough construction, or whenever you need to select a scene that appears quite small on Timeline. Timeline gives a better visual representation of your project in time, and is the only environment that gives access to all the layered items (sound, titles, etc.) at once.

## I. Rough construction

Find each of the scenes you captured through the file window. Drag and drop them onto the Storyboard or Timeline in the order in which you want them to appear. If you get anything wrong, or change your mind, you can simply drag and drop them from one location to another at any time.

## II. Scene editing

Click on a scene. Click on the Video toolbox icon at the left end of the timeline/storyboard window. You can then play the scene



in the view window. The green marker marks the start point of your video clip, and the red marks the end—since you captured more than you needed, you'll have to adjust this. You can drag the green and red markers, and use the play controls to test your selections. You can also run the scene from its beginning, and simply click on the green and red brackets under the edit windows at the instance you want the clip to start and stop, or adjust using the up and down arrows which move one frame at a time. Close the toolbox when you're done.

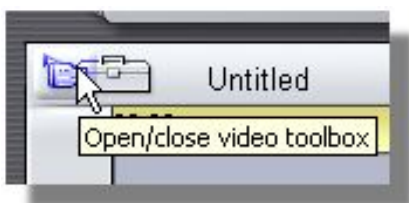


## III. Transitions

With the toolbox closed, click on the "Transitions" tab. Select a transition—double-clicking on them will cause them to run in the view window, showing what they'll do. Drag and drop them in between two scenes to use. Adding transitions **actually shortens your project**, since the transition overlaps a portion of the two scenes involved. You may have to adjust the scene lengths again to make sure things appear as you want. This

is why scenes need pads on either end!

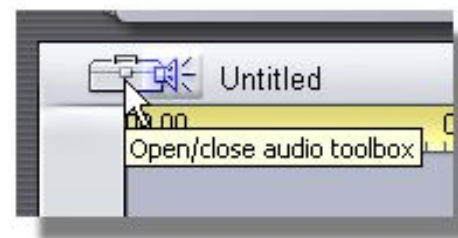
## VI. Titles






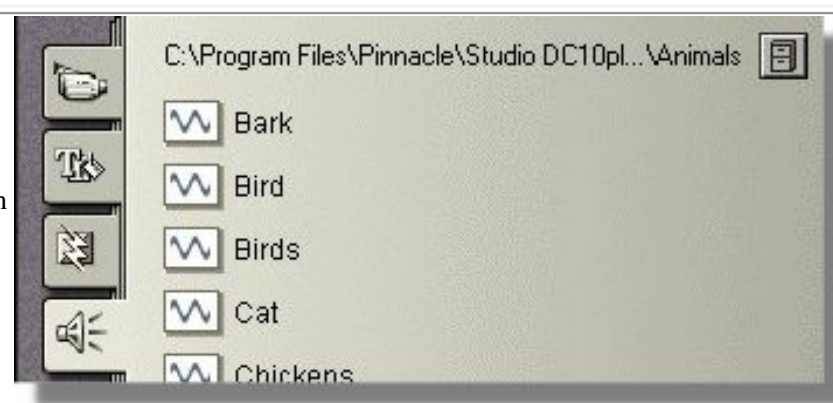

Titles come in two types—full-screen, and overlay. Full-screen titles are just like film clips (drag and drop one on the timeline or storyboard anywhere), except that you can make them longer or shorter simply by dragging them in the timeline. You can create them from scratch from the toolbox, or - somewhat easier - select one in the "Titles" section of Editing (toolbox closed) which pleases, and double-click on your selection (which opens **TitleDeko**, the title editor) to edit the text. It's a good idea to place a 5-second or so full-screen dummy title at the beginning, so that cueing the video is easier - be really clever and put a five-second countdown! Backgrounds can be a solid color, or a digital picture (see "Select Background" in **TitleDeko**).


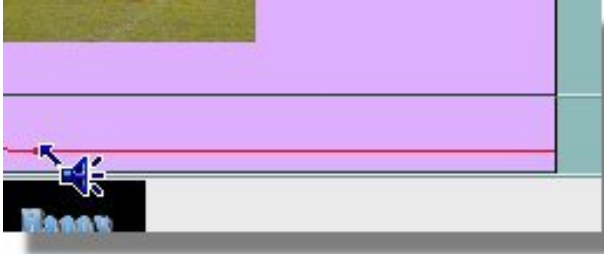
If you want the title as an overlay, you must be in Timeline view. Drag the title into the Title Overlay channel (it's below the video channel). Again, you can shorten and lengthen it as you see fit. Do not use a background, or your video will be completely covered up!

Transitions can be applied to titles as well - both as full-screen titles and as overlays - by dragging the transition to the beginning or ending of the title (remember that overlays are only visible in Timeline view). Titles can also be used to insert digital pictures as stills into your project - insert the picture into the title as a background or insert, and remove all the text.



## V. Sound

Icon	... in ...	Application
	Toolbox	<b>1) Adding Voice Overlay:</b> Use the Toolbox option for this. It is best to use a headset with earphones, since the presence of speakers near a microphone will give feedback. It is possible to use the camcorder as a microphone if it's still connected, but you should still use headphones.
	Toolbox	<b>2) Adding sound from CD:</b> You must have the CD in the CDROM tray when you render - don't choose a music selection and then finish the project after the student has taken his CD home! Editing CD selections is very much like editing video scenes with the toolbox. If you want easier and more dependable control over music, use "Adding sound from file".
	Editing (toolbox closed)	<b>3) Adding sound from file:</b> Studio accepts sound files in .WAV or MP3 format. It also gives a collection of sound effects and music in their package which you can use—browse to effects through the file window. Drag and drop your selections onto the Timeline channel marked for sound. It is very much easier to add music by this method, but you must convert it to WAV or MP3 first. Studio will not accept Windows Media files. 
	Toolbox (may need Pinnacle installation CD)	<b>4) Adding music using Studio's automatic music tool:</b> If you are using this video project for other than classroom instructional purposes, your music cannot be copyright protected, or you must have secured permission for its use. Studio provides some free-to-use canned music files which sidestep this problem. The tool has the added advantage of automatically tailoring your music selection so that it seems to fit exactly in the timeframe you choose, with beginnings and endings included to give this impression - you will not need to use fade-outs and fade-ins to control time span. Simply select the musical style you wish to use, click "Add to movie," and drag to expand or shrink it to cover your chosen time span. Studio will automatically generate a musical excerpt that exactly covers the time you choose. Be forewarned - if you did not do a full install of Studio, this option will ask for the installation CD.

	Toolbox	<b>5) Adjusting volume of all sound sources in "real time":</b> The sound volume selection in the toolbox allows you to play your video project and adjust volume in real time as the video plays. Three volume tools are given to give control over video sound, sound effects, and music.
none	On timeline	<b>6) Adjusting volume of all sound sources on the timeline:</b> In Timeline view, all sound sources show volume as a red line in the middle of the sound window. Volume may be adjusted by dragging this line up and down. If you wish to make adjustments at isolated points on the line, click on it to place an editing point (a square red dot), and drag those points up and down. Some experimentation is required to get used to it, but it gives better and easier control than the "real time" adjustment tool. 

## VI. Adding stills

To add a still picture you have created as a GIF or other image format, either drag it directly onto the timeline from the toolbox images window, or add it as a title and insert the picture into the blank title frame. To capture a still picture from the video, use the capture tool in



the video toolbox - this tool allows you to select a still frame from your video project by clicking a button as the video plays. It then gives you the option of inserting it in your project, or saving it as a separate file. The latter is how you can grab a frame for use as a hyperlink if you intend to use the video on a web page. Here's a [collection of resources for copyright-free images](#) you can use in your video.

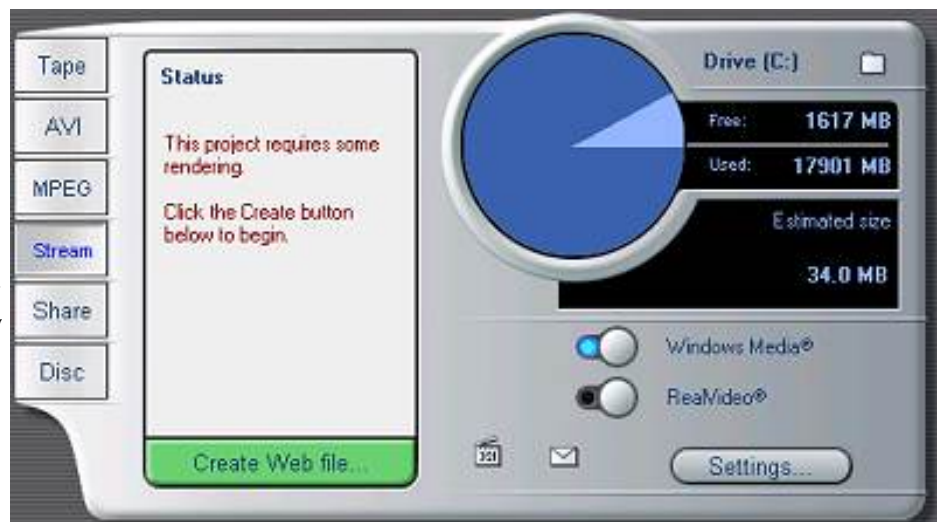
## VII. Watching the entire project

You can watch your entire project from the Timeline. Make sure that transitions don't cover parts of scenes (remember, you've got extra footage at the beginning and end of each scene to help with this). Make sure the overall video is the right length, the sound effects are well-timed, and the title overlays are visible and don't cover anything important.

# Making your Movie

We're now ready for the "Make Movie" tab. You have three choices - shoot back to tape, create a computer file, or create a VideoCD/DVD ("Disc"). If you have captured using "Preview quality," or you intend to produce a file or disk, this last process will require a lot of work by your computer, and sometimes a long time! This process is called "rendering,"—a 5 minute video may take a lot more than 5 minutes to render, and during this time *the computer should not be used for any other purpose!* It'll need all the processing power and memory it can get! If you captured at full quality, and don't have a lot of transitions or other editing, the rendering process is quite quick.

Of course, you can return to any part of the process at any time—go back and capture more, do more editing, add or delete scenes, etc. But any small change requires re-rendering, so one should be confident you're finished before beginning that process.



## I. To Tape

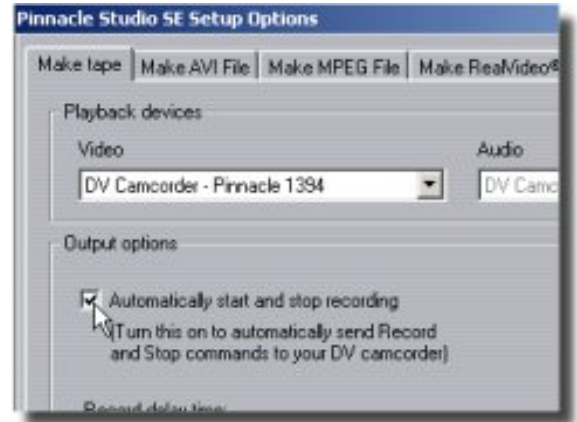


If you're going back to digital tape, you have very little to which to pay attention. Once it is rendered, put a new tape in your camcorder, set it to record, and play your video by clicking on the play button in the view window. That's it!

You can even get Studio to start and stop the "Record" process on your camcorder if you'd like - if you're confident you won't overwrite a tape you didn't want to lose! Go to "Setup" and under "Make Tape" check the "Automatically start and stop recording" box.

**If you need a VHS copy**, you must connect your camcorder to the computer with the Firewire, and the VHS VCR to the camcorder with its provided patch cable. You cannot connect your VCR directly unless you purchased the AV/DV package.

If you are using an analog system (non-digital camcorder or VCR), the process is the same - once the project is rendered, it will play back to your recording device. However, with analog, the sound is handled separately through the sound card, so you have some patching you need to do (see [Getting Started](#) for patching hints).



## II. Make File



If you're going to post the video on the Web, include it in a document such as a PowerPoint Presentation, or simply view it on your computer, you'll need to make a file. Studio gives four major file formats - MPEG, WMV/Real (under "Stream"), and Windows AVI. For a more complete discussion of these formats, see [Video Formats](#). In general . . .

AVI	Use this format with full quality if you intend to take your finished video directly into another Pinnacle project. For computer playback, this format does not compress well, so it tends to be quite large or poor quality.
MPEG	Best for posting as simple media files on the Web, or for playback on your computer. MPEG is the most universal of the video formats.
Stream	Also good for the Web. Under this option, you can also produce high-quality Windows Media (WMV) files, which work well with PowerPoint or other Microsoft Office documents. For all-PC school districts or other computer environments, it's a good choice for Web delivery.

## Video Setting

**Which compression?** The chart below should only be a guideline. Length of the video, capture quality, and targeted use all influence the end results, so the only thing you can do is try and test. After choosing your format, select what compression level and go. You can also change frame size for several formats. The "Stream" area will offer to target a connection speed, and Studio works out the other settings for you. Multi-streaming is possible with RealMedia or WMV (choosing more than one connection speed), but you must have a dedicated media server to use this.

<b>Other Settings</b>	<b>Web delivery</b>	<b>LAN delivery</b>
<b>Compression Level</b>	Try 75%, and see how large your file is. 50% is probably a bare minimum before things get pretty hazy, but probably necessary for anything over 20 seconds or so.	100 percent if a short video, 75% otherwise - ultimately, you need to test running the video during peak LAN activity to see how it does.
<b>Dimensions</b>	160 X 120 is fine - the window will be small, but any larger and your file size will be pretty large. If the clip is very short, you can try 320 X 240 and check the resulting file size.	320 X 240 should be fine, unless you really just have to have full screen quality. Remember that Windows Media Player will run at full screen even if it wasn't created that way - with some loss in quality.
<b>Frames per second</b>	10 is fine.	15, to the eye, is pretty close to a full 29.97 fps, which is the broadcast TV standard.
<b>Sound</b>	16 bit mono is fine.	32-bit mono is better - don't worry about stereo unless it's a music video - and even then when you're sure it'll be played through something other than computer speakers.

**Workstation delivery:** Basically, file size is the only limiting factor here! However, it is rarely necessary to use more than half-size screen (320X240), since most computer screens are much smaller than TVs.

### III. Make Disk

You can, of course, make a video file (II above) and then use whatever CD/DVD burning software you use normally. However, if you want your CD/DVD to play in an ordinary DVD player, it's best to use Studio's "Disc" option. You can also create a CD/DVD in a designated hard drive location for burning later.

If you intend to use ordinary CDR/CDR-W's, the resultant disk will be a "VideoCD," which supports some menu options. A VideoCD will hold about 30 minutes of video, and its quality is about the same as VHS. DVD's will hold a full hour of DVD-quality video content. Pinnacle Studio 9 supports full menus and non-linear access to DVD content.

This process takes longer than any of the others, since the video must first render, and then burn the results to your disk. Burning is *particularly* unforgiving of multitasking - let the computer work alone!