Developing Digital Alternatives to Videotape

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Video materials have long been used in English language teaching. It has been relatively easy to use a camcorder or record from television, do rough editing, and make our own teaching materials. However, technological developments mean the videotape will soon be obsolete. How can we teachers make the switch from analog to digital video for producing classroom materials?

In a class of 24 students taking a listening option of a required university English course (Freshman English) in an EFL context, both analog and digital video made up the bulk of the listening input. Materials were also made available outside of class in several formats: videotape, VCD/DVD, and on the Internet in two forms, Windows Media (wmv) and Real Media (rm). Also uploaded to the Internet were activity sheets accompanied by selected still images from the videos.

The presenter will first review the advantages and disadvantages of reproducing the materials in each format, including digitizing existing videotape material, and will offer practical advice from her own experience. Then she will report the results of a questionnaire given to students to assess their attitudes toward the use of the different video formats.

BACKGROUND--VIDEO IN ELT

For many years now it has been quite common to use videotapes as part of our ELT repertoire. Whether we use materials made for ELT, like the popular *Family Album*, or occasionally bring in an episode of a sitcom such as *Friends* or an excerpt from a popular film, both teacher and students are used to the techniques and activities. The equipment is cheap and affordable for most schools, and a TV and VCR can be wheeled to most any classroom on a cart. Teachers are comfortable using the equipment, and it is also relatively easy to record from one's own television. With two VCRs we can make multiple copies for student use and even do editing, although the results are a little rough. In short videotape and VCRs are common, cheap, and easy to use.

But things are changing. In October 2003—my university students complained that videotape was old-fashioned. "Can't you give us VCDs to work with?" they said. "My parents threw away the VCR and only have DVD now!" "We'd rather watch in our computers and not have to wait our turn in the AV Center." What could I do?

The text I was using, *Focus on the Environment* (ABC News Intermediate Video Library), had an accompanying videotape. It was nearly 20 years old. All my teaching material was on videotape, primarily news stories from BBC World

and CNN International. And it was still easy to record a clever story on videotape and bring it to class. Nevertheless, I knew I would have to start archiving all this old analog material on videotape to a digital format. So in fall semester 2004 I was determined to teach the course Advanced Listening using digital video materials. In this paper first I take the reader step by step in how to digitize archived videotaped materials and include practical advice for classroom teachers gleaned from my own experience. Then I discuss how the students reacted to my efforts to have classroom materials available for them for review after class in different formats by looking at the results of a questionnaire I gave them

HOW TO DIGITIZE OLD VIDEOTAPED MATERIAL

Before You Digitize

First of all we are talking here about archiving or converting some unique short pieces you use for teaching materials. This does not mean converting whole movies; there are other devices that can do this bulk copying, and if it is a commercially available film, you would save time and money by just purchasing the DVD.

Hardware. In order to digitize material from videotape, you will, of course, need a VCR, preferably one with a counter. However, the features of your computer are more important. You will need a reasonably modern computer, Pentium 3 or above for processing power, and lots of memory, both for processing and for saving.

Before you play video into your computer, you need to install a video capture card. Many notebooks already have these but desktop PCs may not. Some people have installed a TV card instead and used the S-Video connection between it and the VCR; I could not get this setup to work with my hardware. However, I already had a video capture card that I had been using with my digital camcorder; it uses a connection known as a fire wire (IE1394).

An additional necessary tool is a digital bridge. This is a little device that converts analog to digital or vice versa, much like a train station sends people out and welcomes people in. It looks like a box with several holes on each side, one side for input, one side for output. One could convert analog input from VCR to digital for computer, or take digital files from computer and convert them to analog to record back on to a videotape in the VCR. To convert analog to digital, we connect a three-jack wire from the VCR output to the digital bridge input, and then connect a fire wire from the digital bridge output to the computer's video capture card input.

If you plan to save on DVD, then you will need to have a DVD burner installed in your computer or externally connected to it.

Software. There are a number of software products available and they are becoming more and more user-friendly, far more so than they were only a few years

ago (Katchen, Fox, Lin, & Chun, (2001). However, there is still a learning curve: you need some hours of practice to get the result you like and to use it with ease. PCs with Windows installed most likely also have Windows Movie Maker© installed; its directions are relatively straightforward, so this might be a good and inexpensive way to get started. I have been using Video Studio© 8.0, a U-Lead product produced in Taiwan; version 8.0 is far more transparent to use than 6.0. The video editing software should provide the basic functions of capturing, editing, saving in several formats (e.g., for DVD, VCD, compressed for Internet use).

Steps in Digitizing

You know your setup is correct when you can play the videotape in the VCR and see it playing on your computer monitor. This means the signal is coming into your computer in a format it can deal with. You have to open the editing software in order to see what is playing from the VCR, and you may also have to disconnect the VCR from any other output, such as a television.

Capturing. The first step is to capture, or copy, what you want. Find the place on the videotape where you want to start copy and then rewind about 15 to 20 seconds and start playing the tape from there. Then start capture. Sometimes it takes a few seconds for capture to start properly, so it is better to capture some extra footage. When you get to the end of the material you want, it is also advisable to let a few extra seconds get captured at the end. The extra can be edited out later.

Some software asks you to select the format in which you want to capture. The highest quality is AVI (Audio Video Interleave, for PC, details at http://www.jmcgowan.com/avi.html#Definition); it takes a lot of memory but it is good for making DVDs. Another high-quality choice for making DVDs is MPEG-2 (MPEG stands for Moving Picture Experts Group, for both PC and MAC, details at http://www.mpeg.org/MPEG/index.html). If your end product will be a VCD, then capture in VCD format. There may be other choices for Internet use. Note that you will later have to save the file, and it saves time if you capture in the same format that you will save in. If you capture in one format and save in another, you computer has to reformat the material. However, if you are archiving, then you will want to save in the highest possible quality to make a DVD at perhaps a future time, but you may want in the short term to make a Windows Media file to take to class or upload to the Internet. Or you may want to save high-quality material on a separate hard drive.

Most capturing is done in real time—as you watch the video—but this may not always be the case. Also in some cases there may be no audio playback while capturing (but your computer is nevertheless capturing both audio and video). With Video Studio© 8.0, there is audio playback with all capture formats except Windows Movie (wmv). I have also observed that whenever there is any small problem in the original videotape, such as a small blip in the original editing, other capture formats may shut off and give me a copyright protected message (even when it is

my own recording). In such cases, Windows Movie is the only format that will execute the capture function to completion.

Editing. This step can include a number of optional steps to modify your video. The first aspect is getting the beginning and end exact. Unlike with editing videotapes, where we had to be satisfied with almost right, with digital editing we can cut at the exact frame. You play back what you captured and pause where you want to cut. In most software you can then move forward or backward frame by frame until you find the exact point you want—you then mark it and cut. You can also use this procedure if you are stitching different segments of video together or when making several smaller files from a larger captured file.

Most software presents the other editing functions as separate steps. These would include adding titles, music, and voice over. These are functions that are not absolutely necessary but can be fun to play with if you feel creative. Titles at the beginning of the video are useful for identifying the material, for example, the title of the speech, the name of the student giving the speech, and the date of recording.

Saving. After all the editing is done, you need to save your work. Most software gives you several choices. The format you choose depends on how you want to use the video. If you are archiving for future use, it is probably best to choose the highest quality and save in an external hard drive or also burn a DVD. You should be aware that there are still different DVD formats, and a DVD made on your computer will most likely play back on your computer but may not play back on your home DVD player connected to your TV and, more importantly, on a school DVD player on a cart connected to a TV or located in a language lab. (For details about compatibility, see http://dvddemystified.com/dvdfaq.html)

VCD is a somewhat better choice. While it may not play back on DVD players, it will usually play back on most computers (assuming they already can play VCDs), including on computers in classrooms and language labs and on students' computers.

If your goal is uploading to the Internet, then you have to worry about size and choose an appropriate format, such as Windows Movie (wmv) or Real Media (rm). Most servers give you a limited amount of space and you don't want to use it up with just a few minutes of video. One minute of a reasonably good quality Windows Movie file takes about 5 MB, so a few five-minute files will quickly use 100MB. The university where I teach currently allots 190 MB per e-course, and by mid-semester I was warned I had exceeded my quota, so I converted my video files to Real Media.

Real Media compresses even more (about 1 MB per minute), but students have complained about poor quality. That is, Real Media quality may be acceptable for viewing material in our first language, but for language learning material in a foreign language, we need a higher quality. Compression rates are sure to improve while quality will increase and, meanwhile, we will probably be offered more space on servers for our teaching and personal material. But for now, size is still a consideration.

Advantages of Digitizing

When I use video in the language lab these days, all I need to carry to class is my flash disk on which I have saved today's material—various textual material to put up on screen, such as comprehension questions, vocabulary items, even the full text to be shown after listening. Or I might have the text of some linguistic material to give my student practice with other varieties of English. When I want to play the video, the Windows Media Player opens and my video begins—full screen if I want, or in a smaller window while students follow some textual material on the screen.

If you have you ever done fill-in-the-blank in class with a videotape, you know that you pause and rewind a bit over and over and often you back up too far. But with a digital file, you don't have other stories on the tape to rewind to. There is just your own story from beginning to end. You can pause and move the cursor just a few seconds forward or back. Constant pausing and rewinding is wear and tear on the VCR, but pausing does not hurt your computer or the file. Moreover, if students work with VCDs or files from the Internet, they also have this individual control over the material, to listen to any portion of the file as many times as like. Digital is the way of the future, and once you start teaching with digital files, you won't want to go back to videotape.

CASE STUDY—ADVANCED ENGLISH CLASS

The Course

The Advanced English—Listening class (進階英文：聽力) was made up of 24 freshmen from all majors who ranked in the top 10% in English on the Joint College Entrance Examination. These were students who, because of their high scores, were not required to take the usual Freshman English course (eight hours over two semesters), but could take instead two courses, of two credits each, of Advanced English and could choose Reading, Writing, Listening, or Speaking options.

The textbook used for the course was *Focus on the Environment* for high intermediate students. It has an accompanying 60-minute videotape consisting of 12 five-minute news stories from ABC News taken from broadcasts in the early 1990s. Although the stories may seem a bit dated, actually, stories about the environment are relevant even after they are produced. The textbook is actually a workbook that presents students with various listening activities and also vocabulary work. We did the first lesson in class together. After this, students were advised to prepare the lessons on their own time. They were told that they could view the accompanying videotapes in the self-access center of the Foreign Language Department building and in the AV Center. One copy of a VCD version which I had made was given to a student volunteer with instructions for students to make copies on their own (because the material was copyrighted).

Materials used in class consisted of two genres of video materials made for native speakers of English. Material on DVD was of the entertainment genre, such

as one episode of popular animated series "The Simpsons" and the 22-minute cartoon "A Charlie Brown Thanksgiving." DVDs have been shown to offer various advantages in teaching, such as the possibility to switch caption language to aid comprehension (Lin, 2000), and the entertainment genre in particular has been shown to be popular with Taiwan's freshmen (Luo, 2004).

Videotaped materials had been recorded primarily from *CNN International* and *BBC World*. Most were of the genre "light" news and were news clips two to five minutes in length about various topics—about some animal adventures, internet dating, and the like. However, a majority of the news items and segments of documentaries were about environmental issues, in line with the theme and text used in the course.

Classroom activities consisted of the usual video activities (e.g., Katchen, 1996; Stempleski & Tomalin, 1990)—some pre-teaching to prepare students for content or specialized vocabulary needed for comprehension, some comprehension questions for getting the general idea and for detailed information, fill in the blank, post-viewing study of any special features or vocabulary in the text.

Since the videotaped material is copyrighted, it is safer using short clips. Moreover, many of the clips I have been using for a long time and are over ten years old—the types of stories I use do not get old fast. Nevertheless, I do try to include some newer topical items when I see them. One advantage to using CNN International or BBC World is that the stories are repeated, so if you see it during one hour, you can probably record it in the next hour. (For more tips on recording, see Katchen, 1996.)

A special feature of the course was the use of a web component. Like many other universities today, National Tsing Hua University encourages teachers to make use of their e-learning platform Blackboard©. This system allows teachers to supplement class instruction with materials on the web and also to track students' use of the pages. As Wentling et al. (2000) point out, "e-learning is the acquisition and use of knowledge distributed and facilitated primarily by electronic means." At NTHU each course is now allotted 190MB of space to use whatever way we like to assist students' learning.

In the past, I had provided students with materials for review by adding the material we used each week to a videotape which was placed in the students' self-access lab. Not only was this troublesome for me, but students began to complain that it was inconvenient to go there, that there was only one tape so only one student could watch at one time, and that the videotape players were old and some were broken. Therefore, I changed my approach and digitized the news stories I would use in class, taking them to class on a flash disk (small portable hard drive) and using the computer in the language lab where my class met. After class, I uploaded the material to our class site on the university's e-learning system.

I had started uploading in Windows Media but soon got a warning that I had exceeded my quota. At first I switched to Real Media, which is much more compressed and takes up far less space, but students complained that the audio and video quality was not good enough for practicing listening skills. Windows Media is far clearer, and I use this format for making materials to show in class. The only

drawback is that I have to remove earlier materials from the website to make room for more as we proceed through the semester.

Along with the video clips, the in-class activities were also uploaded and directions for their use given. Blackboard© permits the teacher to sequence the items, so students would see first the comprehension questions and be asked to watch the video and answer them. Then they might be directed to another activity, such as fill-in the blank. The last suggested segment was nearly always the full text with specific vocabulary and idioms highlighted.

Questionnaire

At the end of the course, I gave students a questionnaire on the course materials. As this was the next to the last class and the week before the final exam, all students were in class that day and answered the questionnaire. I was particularly interested in students' reactions to the course materials, how often they utilized the materials available to them for review, and which formats they preferred. All questionnaires were anonymous.

Did you review the classroom materials after class from the Internet?	
Yes, often	0
Yes, occasionally	5
Seldom	16
Never	3

Table 1

To my surprise and disappointment, students admitted that they seldom utilized the materials I had worked so hard to create.

What place did you like better when using the materials?	
Teacher's website	14
E-learn	5
No real difference to me	5

Table 2

The fall semester of 2004 was the first semester in which National Tsing University used the Blackboard© e-learning platform, switching from another less-stable platform in use for the previous three semesters. Teachers were only allowed to begin using their allotted sites and uploading materials after the first week of class. Therefore, I was using my own website given by the university during the first few weeks of class while everyone, including students, was becoming familiar with how Blackboard© worked. Just before the midterm, I began directing students to use Blackboard© instead. Student preference for my website

may be due to the fact that they were familiar with my straightforward links and then had to learn to work with a system that was not so flexible.

Concerning the class materials on the Internet, indicate whether you used the section.		
Questions before viewing	Yes 8	No 16
Vocabulary	Yes 20	No 4
View the Video	Yes 19	No 5
Fill in the Blank	Yes 8	No 16
Review Full Text of the Story	Yes 17	No 7

Table 3

Only 8 out of the 24 students reviewed the previewing and comprehension questions and the fill in the blank on the Internet. Perhaps they felt that they had already done these activities in class and had no need to look at them again. However, the majority of the students reviewed the vocabulary and the full text of the video, probably because I had told them I would include some of the vocabulary items on the midterm and final. Similarly, most of them admitted watching the videos again.

Concerning the class materials on the Internet, indicate how useful you found each section.			
	Useful	So-So	Not Useful
Questions before viewing	6	13	4
Vocabulary	20	0	3
View the Video	22	00	1
Fill in the Blank	10	10	3
Review full Text of the Story	18	5	0

Table 4

Student evaluation of the usefulness of the activities seems to reflect whether they used the materials, as indicated in Table 3. They found the previewing and comprehension questions least useful, whereas fill in the blank was at least somewhat useful (so-so) for most students. Most found the vocabulary study and full text useful, and nearly all respondents thought that being able to view the video again was useful.

On some of the web pages, I added still pictures from the video. Indicate whether you found them useful or not useful/distracting.	
Useful	22
Not Useful	2

Table 5

When designing the activity pages to be uploaded, I sometimes added one or at most two still images from the video just to make the page look more engaging and also to remind students of the content. I was curious to see of these were any help or hindrance to students. As the majority of students found them useful, I will continue doing this.

What do you think is the best way to provide the videos for *Focus on the Environment*?	
videotape	1
VCD	5
on the Internet	11
ftp to each student	9

Table 6

As mentioned earlier, at the beginning of the semester I gave one student volunteer a copy of the VCD I had made of the 12 news stories that accompanied the required workbook. However, the midterm revealed that some students hadn't studied at all. When asked, they said they didn't have the VCD. Although I had been reminding them to watch the first 6 videos to prepare for the midterm, none of these first semester freshmen spoke up. Two copies of the videotape were always available in the self-access lab. After the midterm, a few students asked for ftp (File Transfer Protocol) for the video files for the second half of the course; I also made two other VCDs for students to copy.

Student therefore had some potential experience with all four forms of delivery. Only one student liked using videotape (some checked more than one box on this question), and only 5 mentioned VCD. This number is probably low because so few actually had a copy on VCD. We might suppose that those who received the files through ftp checked that box. Nearly half the respondents mentioned the internet as a useful means of delivery.

After some thought, I have decided that VCD is the best choice for the homework materials because 1) the files are copyrighted and should therefore not be freely available on the Internet and 2) formats clear enough for L2 learners take up too much space on a website.

CONCLUSIONS

Fall 2004 was my semester to change from analog video to digital video. Now that I have mastered the process, I find the digitized files much more convenient to use and only keep videotape for back-up. I would encourage teachers to do the same with their teaching materials.

Students are generally happy with new technology for learning, but they have to be reminded just how to apply the technology to aid their learning. That is, it not enough for them to watch a video clip for language learning they way they would in their L1; they have to try to interpret the language and to pay attention to

how it is used. Teachers must design their Internet activities to guide students in the learning process when viewing video material.

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