

EMERGING TECHNOLOGIES

Mobile Computing and Language Learning

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One of the clear trends in recent years in the digital world is for more power and more features to be packaged into increasingly smaller packages. Today's mobile computers, digital cameras, and digital camcorders have features unimaginable a few years ago. While in other fields these devices might be dismissed as expensive and unnecessary toys, for the language professional interested in capturing and sharing authentic language materials in digitized form, they offer exciting opportunities for enhanced presentations of target cultures and languages, as well as pedagogical possibilities for the creation of Web journals or electronic trip portfolios.

Laptops and Multimedia

While increasing in speed and storage capacity, laptop or notebook computers have become smaller. Although there are still six- to eight-pound heavyweights, the trend is towards thinner and lighter models with relatively little compromise in performance and features. Laptops such as the Sony [VAIO](#) or Toshiba [Portege](#) are fast and powerful machines under three pounds and less than an inch thick, yet sporting large screens and comfortable keyboards. Toshiba also makes the diminutive [Libretto](#), a full-featured Windows 95 (or NT) computer the size of a paperback book; the Mitsubishi [Amity](#) is similar in size. One important component lacking in these featherweights is a built-in CD-ROM or DVD drive which comes as an external drive. In some cases this is true of the floppy drive as well.

All the machines listed above come ready for sound recording and playback, although an external microphone works better than the built-in one. For digitizing audio and video, a large capacity hard drive is needed, as is probably an external storage device. Some laptops have optional swappable [Zip](#) drives or [SuperDisk](#) drives. Hard drive storage is also available on PC cards (formally PCMCIA cards), or "flip" drives which attach through the PC card slot. To use PC card drives, a Type III slot is required (usually available from two Type II slots being located together).

If you're taking along a laptop to capture video, it's advisable to have a model equipped with a "zoomed video" (ZV) PC card slot, which comes as a standard feature on many new laptops, both Windows and Macintosh. This provides enhanced video digitization since the ZV slot bypasses the processor and displays video directly to the screen. Devices are available which take advantage of the ZV slot such as the [Kritter](#) camcorder or the [CapSure](#) video capture card which supports PAL and SECAM as well as NTSC.

Some laptops also have one or more [USB](#) ports (Universal Serial Bus), to which USB cameras (e.g., the [Kodak DC260](#)) or scanners (e.g., the [Umax Astra 1220U](#)) can be connected. One cutting edge connector that offers faster throughput than USB is [Firewire](#) (also known as IEEE-1394 or i.Link). This has been available on desktop computers and PC cards, and is now beginning to appear on laptops as well. Firewire allows for direct transfer of digital video from digital camcorders, which makes the process of moving video to the computer no more complicated than moving files from a floppy to a hard drive.

Handhelds and Palmtops

What used to be known as personal digital assistants (PDAs) are now generally classified as handheld or palmtop computers. One of the first of this breed, the Newton Messagepad, has been discontinued by [Apple](#). A similar, although smaller and less powerful device, the [PalmPilot](#) (from 3Com) has become very popular. It fits easily into the palm of the hand, allows for pen-based input and offers easy synchronization with desktops or laptops. However, there are few educational programs for the PalmOS, as compared to those still available for the Newton Messagepad and eMate, and data storage is minimal since there is no PC card slot.

The handhelds garnering a lot of recent media attention are those based on Microsoft [Windows CE](#), a slimmed down version of MS Windows ("compact edition"). There are three basic "form factors" for Windows CE devices: a pocket organizer type with tiny keys for typing (e.g., the [Velo](#)), a PalmPilot knock-off with pen-based input (e.g., the [Nino](#)), and a larger size approaching the screen size and keyboard of a notebook computer (e.g., the [Jornado](#)). The [Clio](#) is an interesting example of the last type, an innovative design which can be used as a laptop, folded back for pen-based input, or configured as a mini-presentation device. All models come with Pocket Microsoft Office and the Pocket Internet Explorer Web browser. As do other handhelds, these machines have the advantages of instant-on and long battery life, while having the disadvantages of reduced screen real estate, awkward data input, and limited software.

So far, the Windows CE handhelds have received a luke-warm reception from consumers. One major limitation is the inability to run standard Windows programs. Apple does not currently offer a comparable product, although it has announced plans for a "MacMate"-type product to be introduced in 1999. There has also been much speculation about an upcoming Netscape/AOL device running a Java-based operating system. Until something new comes along, the current crop of handhelds does not offer a very attractive option for use as mobile multimedia stations since audio and connectivity to digital cameras, as well as picture storage, are limited. For Newton users, there is inexpensive software for [audio](#) recording/management as well as for transfer and e-mailing [pictures](#) from a digital camera.

Digital Images, Sound, and Video

There has been an explosion of new digital cameras in the last year. Yet the best quality is still offered by conventional 35mm models. Digital cameras, however, are improving steadily, and high-end models with a resolution of over one million pixels offer excellent quality photos, even when printed. If the object is to display photos on the Web, lower-end, inexpensive models will suffice. With all digital cameras, users have the advantage of immediate access to their pictures, and with most current models users can review and manage their photos on the camera itself through a small LCD screen.

Most digital cameras come with removable storage, usually either on a floppy disk (Sony's [Mavica](#)) or on a "[SmartMedia](#)" card (e.g., the [Olympus](#) or [Toshiba](#) cameras). For the latter, PC card and floppy disk adapters are available. This makes it very fast and easy to transfer pictures from camera to computer. Some cameras have good close-up capability, allowing for the capture of realia when abroad, such as menus, tickets, or even photos of documents, which can later be turned into editable text with optical character recognition software. Some models also have zoom capabilities and a "panorama" mode. The latter allows for combining multiple pictures into a single panorama as well as for creating interactive [panoramas](#) using software such as [QuickTime VR](#). It is also possible to add stereo [directional sound](#) to interactive panoramas, making for a narrated tour in a small size file.

Audio is perhaps best captured in analog form with an inexpensive walkman-style cassette player ([Radio Shack](#) has several models which can record in stereo), that can then be transferred to the computer through a mini-to-mini cable. Devices with better quality sound recording are also available, such as DAT (digital audio tape) or mini-disk. [Sony](#) and [Panasonic](#) make portable versions of these digital audio recorders, but they are much more expensive than analog recorders.

Digital camcorders are also considerably more expensive than conventional analog 8mm or VHS-C camcorders. Digital camcorders typically record in [MPEG-1](#) or [DV](#) ("digital video") formats. Storage formats differ, but most commonly a compact DV cassette is used. The video can be played back on a normal TV or connected to a computer through a video capture card (RCA-style connectors or Firewire). Most digital camcorders also allow for still image capture.

Connectivity Abroad

If you are taking photos while abroad with a digital camera, you may want to send some home or post them to the Web during your trip. In that case you will need a way to connect to the Internet. Most laptops and handhelds use PC card modems, although some models have built-in modems. You can buy expensive "international" PC card [modems](#) which automatically detect dial tones from a variety of national phone systems, but a more economical solution is to check "ignore dial tone" in your modem set-up preferences.

Since calling long distance back to your normal Internet provider would be prohibitively expensive, it makes sense to consider short-term enrollment in a global service such as [AOL](#) or [CompuServe](#), which, in fact, offer free trial subscriptions that may cover the period of your trip. Signing up for one of these proprietary services does not necessitate using their software for Internet access. You can dial the local AOL or CompuServe number to establish a PPP Internet connection, then use your normal Internet programs such as [Eudora](#) or [Netscape Navigator](#). Both services have local numbers in major cities throughout the Western world. There are also [international internet service providers](#).

If you're travelling in a country with a phone system that sends periodical tax assessment signals (such as Germany or Spain), it is useful to have a combination surge protector and [tax signal filter](#). You will also need a [phone plug adapter](#) for the country you are visiting. Most laptops now have automatic adaption to 110 or 220 volts as do power supplies for digital cameras and camcorders, but a [electrical plug adapter](#) is needed.

Uses for Language Learning

Study abroad trips are ideal candidates for electronic or Web journals which can be done at the time or afterwards. Both students and teachers can be involved. Depending on equipment availability, students can be assigned multimedia projects such as conducting interviews, collecting menus, designing photo essays, or creating tourist films. Of course, individual trips can be documented electronically as well and serve as travelogues for class use. A small camera and cassette recorder are neither heavy nor expensive, but could serve well as vehicles for creating a multimedia, Web-based portfolio of a trip. Keep in mind that if you use a digital camera, you will need to be able to download images, either to a local device or through e-mail. On a recent hike through the Black Forest, I was able to update regularly a [Web journal](#) through periodic uploads of text from a palmtop computer and images from a digital camera.

Resource List

Mobile Computing

- Sony, maker of the VAIO subnotebook
- Mitsubishi, maker of the Amity subnotebook
- Toshiba, maker of the Portege and Libretto subnotebooks
- Windows CE 2.0 handhelds comparative list
- Review of 22 handheld computers from CNET
- Windows CE Topic Center from CNET
- CECity, good source of info on current developments
- Windows CE home, official Microsoft home for Windows CE
- Report on Clio, an innovative CE device

- Vadem, home of Clio
- Philips, maker of the Velo and Nino CE computers
- Chinese CE handheld, about a Chinese-made handheld with color screens and Chinese language input
- PalmPilot Survival Guide
- Palm Computing, the official site
- [Palm VII](#), information on the new Palm with built-in wireless connectivity

Multimedia

- QuickTime, for information on Quicktime VR
- DV Links from Adaptec, one of the first companies to support DV/Firewire
- Irez, home of the Kritter and CapSure card for zoomed video (Mac and Windows)
- Sony cameras, other multimedia
- [Panasonic](#) cameras and more

Connectivity

- AOL International Internet Service Provider
- CompuServe International Internet Service Provider
- List of international Internet Service Providers
- Overseas Appliances, a source for plugs and adapters
- Mobile Planet, a source for handhelds and traveling accessories

All links validated on January 31, 1999.