

EMERGING TECHNOLOGIES

Literacies and Technology Tools/Trends

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Our information age has expanded considerably the concept of "literacy." While technology offers new ways to teach the traditional literacies of reading and writing, learning how to use digital technology has become itself a vital stepping stone to being "literate" in the twenty-first century. New tools are making it easier to become both an informed user and an author/developer of new media and electronic texts. Emerging standards are helping in this process, too, although sometimes at the cost of narrowing choices.

READING

Literacy is a shared responsibility between consumer/learner and producer/teacher. The electronic resources instructors have available today provide myriad opportunities for making texts more comprehensible to students. We know quite a bit about [optimized formats](#) for screen reading, as we do also about the benefits of [glosses](#). And the Internet has provided a powerful mechanism for making texts of all kinds available to readers. For language learners, authentic texts in the target language abound (journals, travel reports, newspaper articles, reviews, family histories, government reports, recipes, etc.). In many countries today, what appears in print also becomes available electronically. Yet the vast majority of texts on the Web today are not optimized for either screen reading or print. Nor do many of the texts targeted for language learners offer glosses or other comprehension aids. Web technology in this area has not caught up with the state-of-the-art in fixed media creation. Some programs on CD-ROM make extensive use of multimedia to aid in text comprehension. Cyberbuch, for example, (by Dorothy Chun and Jon Plass; [reviewed](#) in this journal), makes excellent use of video and graphics for text introductions and comprehension help. Authoring programs are available which help to gloss texts, using either text annotations or other media (graphics, sound, video). Several programs, [annotext](#) and [GALT](#), for example, have been developed specifically for working with second language texts.

The current technology of the Web makes it possible to present texts in a variety of formats which can be user-selected and [changed](#) on the fly. Currently, for compatibility reasons, most such applications use server-based approaches, reformatting through CGI scripts ("common gateway interface"). Some text manipulation is possible through JavaScript (extensively on Microsoft's [Internet Explorer](#)) but [XML](#) ("extensible markup language") and a common and scriptable browser "document object model" (or [DOM](#)) should make this local text manipulation much more powerful as well as easier to create. Some Web sites are beginning to present texts not only in Web-formatted versions, but also in [PDF](#) (portable document format) designed specifically to be printed and read on paper. PDF files, viewed with the free [Acrobat Reader](#) from Adobe, can include features such as navigation bookmarks, links, and searching. Some text collections offer [versions](#) in popular electronic book formats. A new electronic book format which has generated a good deal of interest is [Microsoft Reader](#) used in Microsoft's [PocketPC](#) (the successor to WindowsCE) and also available on Windows-based computers. It uses a new font rendering process called "[ClearType](#)" to considerably enhance screen readability. A conversion [tool](#) is available for e-book creation in Reader format as are [tools](#) for Palm compatible books. Microsoft has made marketing agreements with [Barnes and Noble](#) and [Amazon](#) to make electronic books available in MS Reader format widely available.

WRITING

Few today would question the efficacy of word processing as an aid in learning to write well. Electronic revision makes process writing much more practical. Proofing tools in the target language can be invaluable aids to language learners. The arrival of networks has of course provided further opportunities for collaboration, mutual proofing, and shared writing. From early LAN programs such as [Daedalus Interchange](#) or [Norton Connect](#) to Internet-based tools, language teachers have used a variety of approaches to encourage student practice and proficiency in writing. E-mail is, of course, the most widely used form of computer-mediated communication (CMC). Many language teachers have been using e-mail as a means to communicate with students but also as a vehicle for students to interact with each other and with other language learners or native speakers. Projects such as the [Tandem Network](#) have been created to facilitate the use of e-mail exchanges in language learning. It used to be that using e-mail involved learning a dedicated e-mail program, such as the Unix-based Elm or Pine, or one of the popular desktop applications [Eudora](#) or [Outlook](#). Today many users read and send e-mail through Web-based mail interfaces such as [Webmail](#). Often, users who sign on to a free e-mail service such as [Hotmail](#) will use its interface. E-mail access is also beginning to become more widely available on smaller electronic devices such as Palm organizers or cellular phones equipped with small screens. The reduced screen size of these devices makes only short messages practical and formatting may be a problem. The eventual use of XML, combined with [CC/PP](#) ("Composite Coupling/Preferences Profiles") technology, should help in that area. However, access to e-mail attachments, an increasingly popular option, may remain problematic, despite translation utilities.

Other forms of CMC are also being used widely in language learning. Web-based bulletin boards or discussion forums are available in a variety of formats, [Web Crossing](#) being currently one of the most popular. Many forums are linked from course Web sites, created with tools from course management systems such as [WebCT](#) or [Blackboard](#). These offer the advantage of user-restricted access. E-mail and bulletin boards have generally outstripped in popularity synchronous modes of communication, in which on-line users communicate in real time with one another. Internet Relay Chat ([IRC](#)) and various kinds of chat rooms can be effective in small groups and are often used to connect language learners and native speakers for focused discussions on concrete topics. There are as well more complex text-mediated virtual environments such as MUDs (multi-used domains), MUSHes (multi-user shared hallucination) or MOOs (multi-user object oriented). There are a number of [MOOs](#) targeted specially to language learners. With the exception of MOOs, students are generally expected to jump into these applications with a minimal orientation. Effective use of MOOs requires a substantial amount of training; that factor, as compared to the instant usability of AOL "Instant Messenger" ([AIM](#)), helps understand the latter's current popularity. Considering the ubiquity of instant messaging among younger users, explorations of its use in language learning may be of interest.

ELECTRONIC LITERACY

As a number of other US colleges and universities have done in recent years, Virginia Commonwealth University (VCU), my home institution, will require all incoming students next fall to own a computer. Universal computer ownership (and ubiquitous network access) by students brings with it a host of thorny issues, including procurement, user support, network infrastructure, classroom configuration, and faculty/student training. The central issue, however, is electronic literacy. What do we expect our students to be able to do on their computers, on the local network, on the Internet? At VCU, the faculty has [recommended](#) that at a minimum, students be able to use e-mail, word processing, the Web, and spreadsheets. In most cases "computer literacy" as defined by state education standards (such as those of [Texas](#) or [Virginia](#)), does not go beyond development of similar basic skills in core PC and Internet applications. Informed information retrieval, despite the [urging](#) of librarians, is seldom included. Even

less likely to be included is an awareness of issues such as design (user interface, color schemes, accessibility issues), programming paradigms (procedural, object-oriented, hierarchical), or network basics (internet vs. intranet, LAN, IP), concepts which lie at the basis of the virtual world becoming so important a part of students' real world.

Generally left out of computer literacy as well are multimedia use/creation. Students may be more familiar than faculty in this area, especially in the use of MP3 files (MPEG 1 layer 3), a format with tremendous popularity which delivers high quality audio in a highly compressed format. One of the factors that has contributed to the success of the MP3 format has been the ease of use of [encoders](#). Programs such as [Soundjam](#) make it easy to "rip" MP3s from music CDs and to obtain/play MP3 files from Internet sites. In fact, access to all forms of Internet-delivered audio and video has become much user-friendlier in recent years. For most formats the Web browser itself handles playback, or a player (such as the [QuickTime](#) player) may come bundled with the Web browser installer.

Multimedia authoring programs have become increasingly user-friendly. Apple's [iMovie](#), for example, designed for broad consumer use, has a very short learning curve, not even requiring that a movie be named (it is given a default file name) when created. Other video creation programs are similarly user-friendly. This holds true for streaming media creation as well. It used to be that creation of a synchronized slide show with audio was a long, involved process. Now [RealNetworks](#) has a suite of tools (including "[Real SlideShow](#)") which make the development of this and other advanced uses of multimedia very accessible (using their proprietary format). Learning about different audio and video formats is not generally recognized as a necessary component of computer literacy. Yet many current media consumers, given today's software and hardware advances, are likely to become media developers in the near future, and would benefit from basic knowledge of file compatibility and network delivery in this area.

As is the case with all software, installation of players and browser-linked helper applications has become much easier. This, however, is still a major support issue in setting up students for on-line courses. Installation and configuration of software are seldom part of computer literacy programs. The popularity of "smart" installers may lead to the conclusion that such knowledge is no longer necessary. Many users, however, have experienced the problem of such installers being too "smart," that is, not allowing installation on marginally compatible systems, or permitting customized configurations. If users have questions on the installation process, or on how to use the program, they are likely to find little help in accompanying print manuals. The trend in the software industry the last several years has been towards electronic manuals (in PDF or HTML formats) or just availability of electronic help. Electronic help, however, is not always well-designed, with help screens sometimes obstructing the program they're supposed to be helping or changing the state of the computer, causing user confusion.

OUTLOOK: STANDARDS AND UNIFORMITY?

One of the concerns in designing a program of computer literacy is the lack of accepted standards in many areas. The Internet ideals of openness and inter-operability have been fading as commercialization grows. Microsoft's new electronic book format, for example, is not compatible with popular Palm hand-helds. Users of AOL's "Instant Messenger" cannot interact with other instant messaging systems, such as those from Microsoft or Yahoo. On the other hand, taking advantage of a de-facto standard tends to perpetuate that particular format. The ubiquity of [Microsoft Word](#), for example, had led to many training courses in using that program for word processing. This leads to standardization, popular with support personnel, but limiting in choice to users and tending to drive away competing programs which may have advantages in certain fields. [NisusWriter](#) and [Nota Bene](#), for example, offer compelling advantages for language professionals.

Another complicating factor in outlining a program of computer literacy is the constant state of flux of information technology today. Should students, for example, have a basic awareness of HTML (even if not knowing any code)? But isn't HTML giving way to XML? And, in any case, to author Web pages no longer requires any knowledge of any encoding system. In fact, Web authoring programs today such as [Dreamweaver](#) or [FrontPage](#) not only facilitate creation of static Web pages, they also enable creation of interactive Web pages using a pull-down menu to insert JavaScript "behaviors" or snippets of code. Even learning about Web site navigation can become an issue. On many U.S. campuses, faculty use a Web course authoring program such as WebCT or Blackboard to create a course Web site. An argument often used in support of the use of such programs is that each course Web site presents a familiar and comfortable user interface to students. Yet shouldn't students learn how to navigate Web sites outside of the university and then find their way back? An alternative to proprietary course management systems could be a set of user guidelines encouraging faculty to create Web sites with consistent page formatting and navigational structures. Users of different course management systems currently cannot easily share materials. A development which should help is the adoption by major software companies of the [IMS](#) standard ("Instructional Management System"). This provides for the use of a standard set of meta-data (for better location and retrieval) and exchange of learning modules.

RESOURCE LIST

Literacy and Technology

[Technology and Literacy](#) by Cynthia Selfe

[Redefining Literacy: The Multilayered Grammars of Computers](#) by Cynthia Selfe

[The Nine Information Literacy Standards for Student Learning](#) (American Association of School Librarians)

[Computer Skills for Information Problem-Solving](#) by Michael B. Eisenberg and Doug Johnson

[Texas Essential Knowledge and Skills for Technology Applications](#) (Chapter 126 of the Texas Education Code)

[Computing Skills Workshop](#) (Carnegie Mellon University)

[Literacy and Machines: An Overview of the Use of Technology in Adult Literacy Programs](#) by Terilyn C. Turner

[The Death of Documentation](#) by Adam C. Engst

Reading/Texts

[Interface Design and Optimization of Reading of Continuous Text](#) by Paul Muter

[Strategy-based reading lesson](#) in Russian (Irene Thompson)

[The On-Line Books Page](#) (University of Pennsylvania)

[FL texts](#)

[Gutenberg Project](#)

[Humanities Text Initiative](#) (University of Michigan)

[Electronic Text Center](#) (University of Virginia)

[Microsoft Reader](#) (new e-book format from Microsoft)

[ReaderWorks](#) (tools for creating "Reader" e-books; commercial)

Writing/Computer-Mediated Communication

[Effectively Using Electronic Conferencing](#) (Indiana University)

[Educational Uses of CMC](#) (Penn State University)

[Chat Etiquette](#) The Do's and Don'ts of On-line Conversation

[Indispensable Writing Resources](#) (Quint Careers; commercial site)

[High Wired enCore](#) Moo database

[More about MOOs](#) created by Steve Thorne

[LinguaMOO](#) (University of Texas at Dallas)

[PennMOO](#) (direct telnet link: use "connect Guest"; University of Pennsylvania)

[Dave's ESL Cafe](#) (Dave Sperling)

[SchMOOze University](#)

[mIRC](#) (IRC client for Windows)

[IRClE](#) (MacOS IRC client)

Multimedia

[Making MP3s](#) by Jerry Kindall (from Tidbits)

[Real Jukebox](#) (for creation of RealAudio and MP3 files)

[Real Slide Show](#) (for creating synchronized slide shows)

[Apple Quicktime Player](#)

[Windows Media Player](#)

[Macromedia Shockwave](#) (browser helper application)

[Winamp](#) (MP3 player)

[Microsoft Netmeeting](#) (video teleconferencing)

[CUSeeMe](#) (video teleconferencing)

Web/Internet Literacy

[Web Skills for Language Learners](#) (WELL Project)

[WELL in the classroom](#)

[Knowledge Design](#) (on creating interactive Web pages; from George Metrevski)

[Internet Resources for Language Teachers and Learners](#) (University of Hull, C&IT Centre)

[Managed Learning Environments](#) (comparison of Web course management systems) by Peter Jackson and Geoff Minshull

[Quick and Dirty Web Editing](#) (Penn State University, Center for Language Acquisition)

[Netscape Composer: An Introduction](#) (Pat Pecoy)

[Non-western Character Sets, Languages, and Writing Systems](#) (overview of internationalizing efforts; from W3 org)

[Multilingualism and the Internet](#) (WorldWide Language Institute)

[Multilingual Information Society](#)

[How to type accents](#) (Pat Pecoy)

[Unicode](#) (information about Unicode)

[The ISO 8859 Alphabet Soup](#) by Roman Czyborra

[Yamada Font Archive](#) (University of Oregon)

[NETGLOS](#) (an online glossary of Internet terms in 10 different languages; Worldwide Language Institute)

[The Internet Dictionary Project](#)

[Winzip](#) (unzipping utility)

[Stuffit Expander](#) (expanding compressed files for Macintosh or Windows)

[Acrobat reader](#) (for reading PDF files)

[Netscape browser](#)

[Microsoft browser](#)

[WS FTP client](#) (for Windows)

[Fetch](#) (FTP client for MacOS)

[FLTeach quiz](#) (for testing your electronic literacy; Foreign Language Teaching Forum; by Jean LeLoup and Robert Ponterio)