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**Technologies for
Adult Literacy Programs**

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Introduction

During the last decade, computers and other electronic technologies have become important tools for many educational purposes. These technologies offer special opportunities for supporting and expanding literacy learning and instruction. As hardware becomes increasingly available, and software options diversify, educators are looking for effective ways to integrate these technologies into various types of literacy programs. The purpose of this review is to provide an overview of the types of technologies that are currently available and the kind of learning they support, and to illustrate how they can be used with adult literacy learners.

The needs of adults with respect to literacy vary widely. They include English as a Second Language (ESL), work-related literacy skills, or overcoming learning disabilities. To narrow the scope of this review, we have chosen to focus on technologies that support the teaching and learning of language-related literacy skills. These include the abilities to comprehend a wide range of written and printed texts, to communicate effectively both orally and in written form, to think critically and reason logically, and to solve problems and make decisions. Such abilities are critical for people to function in different aspects of their lives, and most importantly, they help them to develop their knowledge and potential, and facilitate life-long learning.

Current technologies that support literacy learning in adults include microcomputers, for which we will describe three major types of applications: instructional software, tool software, and computer networks. The other major category of technology include electronic visual media such as video, TV, and videodisc technology. For each of these technologies, we will describe the kinds of opportunities they offer for literacy learning. It is important, however, to keep in mind that these are just opportunities, and that to a large extent an educator's ability to choose, adapt, and use the technology effectively will determine its success.

There are three major types of instructional software: drill and practice programs, tutorials, and simulations. These programs usually specify a particular kind of content, as well as specific skills for the learner to practice, acquire, or apply. Instructional software can be an important tool for students building basic language and communication skills. Since this type of software is relatively self-contained, it offers teachers the opportunity to individualize instruction, and enables students to work on their own time and at their own pace. Existing programs, most of which

**Computer Applications:
Instructional Software**

focus on teaching basic language skills, may be most appropriately used in ESL and remedial reading and writing programs.

One problem with this type of software is that there are very few programs available that are explicitly designed for adult literacy learners. Software designed for children is often inappropriate for use with adults, because of the choice of vocabulary and the contexts in which activities are embedded.

Drill and practice programs. These programs allow the learner to practice a previously learned skill. The content is usually structured, focusing on a specific sequence or kind of skill building. Many drill and practice programs use a game format to present activities in a motivating context. Examples include programs that help students to master such basic skills as spelling or memorizing vocabulary.

Tutorials. Tutorials introduce students to new skills in a step-by-step approach. Existing programs teach skills such as pronunciation, the use of root words and prefixes and suffixes, or keyboarding.

Simulations. Simulations require the learner to apply learned skills, rules, and information to real-life situations, and to draw conclusions to solve a problem. Examples include programs that offer opportunities for students to practice communication and problem solving skills.

Tool Software

Examples of tool software include word processors, databases, and graphic programs. They provide the user with a framework for writing, creating files, and combining graphic and textual materials. Depending on the instructional context in which tools are being used, they can support learning of a broad range of reading, writing, and communication skills, from the most basic to the most complex. Moreover, the use of tools also helps adult learners to acquire computer skills that are useful for the workplace.

Unlike instructional software, these programs are content free, which makes them adaptable to a variety of purposes. While this affords the kind of flexibility which is often desired by educators, the adaptation of tools requires thoughtful preparation on the part of the instructor. The effectiveness of tools is very often dependent on the types of resources and activities in which they are embedded.

Tool software is readily available today, and several programs are available that are specifically designed for educational use. The flexibility of tools makes them adaptable to a broad range of adult literacy programs.

However, since the menus and written directions of many software programs in this category are language-based, these programs may not be appropriate for students with very limited English and reading skills.

Word processing tools. Word processing software is a very powerful tool for writing. It enables the user to enter text which can be easily moved and changed without having to rewrite it, and to print out professional looking writing. Word processors usually include a variety of options for manipulating and editing text. Most programs feature spell checkers and thesauri that help the user to locate and correct spelling errors, and replace words. Supplementary programs such as grammar and style checkers can be used to broaden the options for analyzing and correcting a piece of writing. Some word processors also include formats and options which help the user to discover what they want to say and organize their thoughts. Examples are outlines, brainstorming, tools, and prompts (e.g., “Who is your audience?”, “What is your main point?”).

Word processors not only offer a quicker and more efficient means for accomplishing different aspects of a writing task, they also highlight for the user different aspects of the writing process (idea generation, editing, revision). Moreover, the visibility of writing on a word processor, and the availability of printed copies of drafts can readily promote social interaction around writing tasks. Word processors thus facilitate a process approach to writing, which places emphasis on choosing meaningful topics, writing in groups, producing multiple drafts, and conferring about drafts.

Database tools. Database programs offer formats and operations that make it possible to enter, organize, classify, and locate textual information readily, and in relation to specific categories set up by the user. For instance, a database could be used to create a word bank, where students select words from their readings, and enter them into one column or field of the database. Other fields of the database could be used to define the words and to specify related information such as synonyms, antonyms and so on. Once the word bank is set up, it can be searched, sorted, and printed in whatever ways suit the user’s needs.

The process of creating and searching a database is very literacy intensive. It involves the most basic reading and writing skills (e.g., spelling, encoding) to the most complex problem-solving and decision-making skills (e.g., organizing information, and querying).

Graphic tools and desktop publishing programs. Graphics software ranges from open-ended drawing programs to visual databases, to integrated writing, graphics and animation programs, to desktop

publishing programs. These tools offer a motivating context for reading, writing, and communicating, as they allow the user to illustrate stories, poetry, reports, or advertisements, to create newsletters, or to compose greeting cards and cartoons.

***Computer
Networks/
Telecommunication***

Networks that link computers together either locally, within a classroom or a building, or long-distance, through modems and telephone lines, are very promising new tools for literacy learning. Not only do networks facilitate communication and collaboration among people, and provide access to information and resources, they also make it possible to dramatically reconfigure traditional instructional settings by creating links between students and teachers over long distances. This feature may prove to be especially promising for adult literacy programs, as it provides opportunities for reaching out to new learners, and affords students the flexibility to work on their own time. Current features of electronic networks include electronic mail, bulletin boards, real-time conferencing, access to a variety of databases, curriculum-based projects, access to experts, and training online through written materials.

Computer networks offer learners the opportunity to practice a broad range of reading, writing, and communication skills in real-world and meaningful contexts. For instance, a learner could exchange messages via electronic mail or bulletin boards with participants of adult literacy programs in other cities. Features such as online courses and tutoring can be used in the service of both basic and complex literacy skill building.

Like tool software, the use of content-free features of computer networks such as electronic mail can be integrated into a variety of programs, but also requires educators to design activities and supply resource materials to be used in conjunction with the technology. Long distance learning, which consists of self-contained lessons that are accessed by the learner via telecommunications, are structured and content-specific. Much of the success of this application is likely to depend on the design of such courses and how and where the learner will be able to obtain access to the technology.

***Visual
Technologies:
TV/Video***

Video technology and TV offer a variety of opportunities for supporting and enhancing literacy learning: They can illustrate the application of literacy skills in real-life situations, and provide meaningful contexts for students to practice and apply those skills. Moreover, since TV and video technology is now readily available, not only in educational institutions, but also in many homes, it offers opportunities for reaching new

audiences, and for students to learn at home, on their own schedule.

Instructional TV/video programs. Instructional programs focus on specific skill building, and can illustrate literacy skills in real-life situations. Some of them are designed to be primarily motivational, to get students interested in learning and help them to find literacy programs. Existing telecourses, available on video or Cable TV, include ESL, reading, and GED programs.

Closed captioned TV. A new technology, soon to be widely available, is closed captioned TV. Federal legislation was recently passed requiring that as of 1993 all new large television sets come equipped with a chip that decodes closed captions. Viewers need merely flip a switch to get simultaneous text translations of the spoken language of a television program. The technology was originally developed for the deaf community, and the legislation was passed with particular emphasis on their needs for information access. But this new capability of all standard television sets has great promise for adaptation for adult literacy learning. Many of today's commercial and public broadcasts are already close-captioned and the number continues to expand.

Closed captioned television is an especially promising and powerful resource for adult literacy learning because it has a built-in mass market distribution mechanism. This makes it an entirely different kind of resource because literacy practice can be provided incidentally as people watch entertainment broadcast television or videotapes. Learning to read can take place in the context of watching favorite soap operas or primetime dramas, or while parents watch television with their children.

Video production. Video production can provide a motivating context for adults to engage in a variety of literacy activities, such as script writing and reading, keeping logs, planning activities, negotiating plots and so on. Literacy practice becomes thus embedded in a real-life context that is highly meaningful to adult learners.

Videodiscs are the visual counterpart to audio compact disc technology. The information on a videodisc includes both video and audio. To play a disc, a special videodisc player is required, which translates the information stored on the disc into sounds and visual images that are displayed with a TV monitor. Sometimes, a disc, player, and TV are combined with a personal computer which allows the user to control the order or sequence of audiovisual information presented on the TV screen.

*Videodisc
Technology*

Standard videodisc players offer a range of unique technical features: two independent sound tracks, freeze-frame capability, variable play speed, and frame-accurate searching. With these features users can, for example, switch to an alternate sound track with the press of a button; stop on any image indefinitely; slow down, speed up, reverse, or repeat any video segment; or jump immediately to any of 54,000 individual images on a disc. These features uniquely provide users with the opportunity to interact with and control the information stored on a videodisc. For example, a videodisc for ESL learning might feature two independent audio tracks for the same video segment, thus enabling the user to access a voiceover in English as well as her native language. Or the videodisc may present the ESL learner with a videoclip on an emergency situation, and provide her with a multiple choice question on how to call for help in English. The user's choice then determines what appears next on the screen. In this example, a videoclip may follow, illustrating how other people would react to the request for help chosen by the student.

Videodisc technology has the potential to support learning and practice of a broad range of literacy skills, including reading, writing, listening, communicating, problem solving, decision making and so on. A particular advantage of this technology is its responsiveness to the user, and the opportunities it offers for learning and practicing literacy skills in situations that are close to real-life.

Since videodisc technology is a relatively recent development, there are, as of now, only few videodiscs available that can be used in adult literacy programs. Examples include videodiscs that use an instructional format to teach students basic and workplace-related literacy skills (e.g., composing business letters, interpreting invoices), and audiovisual databases which allow users to create multimedia presentations that integrate visual, audio, and textual materials. Instructional videodiscs often include specific content (e.g., English for industry) and target specific audiences (e.g., ESL), so that effective use may be limited to particular adult literacy courses.