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REPORT *brief*

T Technology offers new ways to boost literacy

Technology offers a promising alternative to the labor-intensive, tutorial-based teaching that makes up the bulk of today's literacy training, according to the OTA report **Adult Literacy and New Technologies: Tools for a Lifetime**.

Multimedia technologies with speech, video, and graphics offer new hope to those who have repeatedly failed in paper-and-pencil educational activities. Computer-assisted instruction enables learners to proceed at their own speed using materials relevant to their lives and tailored to their interests. Hand-held electronics, such as pocket language translators, allow adults to learn on the bus or during coffee breaks—whenever they are able to study.

Telecommunications technologies are equally important. Electronic networks remove the isolation and stigma of low literacy as adults share experiences in computer-based group discussions. Closed captioning, now a standard feature in new television sets, allows learners to see and hear the words on broadcast or cable television to reinforce language and reading development. Distance learning systems bring the best teachers from around the country to the most remote learners.

All this is possible with the technologies available today; much more will be possible in the next decade. Yet the full range of capabilities has hardly been touched. OTA finds that most literacy programs have barely envisioned the educational potential offered by new technologies—fewer still have adopted them. Similarly, adult literacy applications are not high priorities for most software and hardware developers. And while Federal efforts to support technology for mathematics

- In inner-city Philadelphia, adult learners and their teachers from eight community-based adult education programs throughout the city are linked via computers. The system enables students to download lessons on a wide range of subjects, share their writing with one another, and communicate with their teachers.
- In Mississippi, welfare recipients participating in the JOBS (Job Opportunities and Basic Skills) program take literacy and job-readiness skills training classes over a satellite system that reaches more than 1,000 adults in some of the most rural areas of the State.
- At the General Electric aircraft engine factory in Rutland, Vermont, employees upgrade their reading and technical skills with the help of a multimedia software system that includes text, speech, graphics, and animation, with the content built around concepts and vocabulary used in the plant.

and science education, special education, and military training have created a base of innovative and effective applications, the technology potential for adult literacy has barely been tapped.

KEY FINDINGS OF THE REPORT

- Standards and requirements for literacy have increased over time and a large number of adults needs to improve their literacy skills. OTA finds that at least 35 million adults have difficulties with common literacy tasks. Although many of these adults can read at rudimentary levels, they

OTA REPORT *brief*

Adult literacy programs, providers, and people

What Programs Are Offered?

- Adult basic education
- Adult secondary education
- GED preparation
- English as a second language
- Workplace literacy and skills
- Computer skills
- Family literacy
- Combinations of the above

Who Are the Providers?

- Local school districts
- Community colleges
- Community-based organizations
- Libraries
- Literacy volunteer organizations
- Prisons
- Labor unions
- Business/industry
- Preschool and Head Start programs
- Coalitions of the above

Who Is Being Served?

- High school dropouts
- Immigrants and refugees
- Job training clients
- Families
- Welfare clients
- Adults in the workplace
- Displaced workers
- Displaced homemakers
- Incarcerated teens and adults
- Retirees

What Are the Funding Sources?

- Federal Government
- State governments
- Local governments
- Foundations
- Business and industry
- Unions
- Professional organizations
- Participants

What Technologies Are Used?

- Stand-alone and networked computers
- Integrated learning systems
- Multimedia systems
- Videotape, videodisc
- Hand-held and portable devices
- Consumer electronics
- Broadcast and cable television
- Closed captioning
- Distance learning networks

The Office of Technology Assessment is an analytical arm of the U.S. Congress. OTA's basic function is to help legislators anticipate and plan for the positive and negative effects of technological changes.

need higher levels of literacy to function effectively in society, to find employment, or to be retrained for new jobs as the workplace changes.

- Adult learners have unique instructional needs that are only partly met by the patchwork of programs that provide adult literacy education. Despite a growing number of programs, fewer than 10 percent of the population in need are being reached. Even fewer are able to stay with programs long enough to achieve their full literacy goals. Services available to learners are largely a function of where they live or work, not the learners' needs.
- State and Federal efforts have expanded adult literacy programs. Although data on total funding for literacy are not available,

U.S. Department of Education statistics indicate that Federal funding has doubled since 1980. Over this same period, State and local support for adult literacy has grown more than eightfold. Recognition of the importance of literacy in other programs (e.g., welfare, job training, corrections) has increased the number of agencies supporting adult literacy services. Despite this growth, adult literacy education operates at the margin and the system of services has become increasingly fragmented.

- Within this diverse web of adult literacy programs and providers, there are many common problems that technology could help overcome. For example, technology can help alleviate some of the difficulties

OTA REPORT *brief*

of administration, service delivery, recruitment and retention of clients, and high turnover of staff and volunteers. Electronic databases can help maintain information, track funds, and match learners to support services. Programs could use telecommunications technology to train volunteers and staff and connect them with one another to share information and reduce isolation. And technology can help programs move their resources beyond the classroom, to reach learners wherever they are.

- Despite this potential, technology for both learners and programs is not being exploited, and significant barriers inhibit wider and more sophisticated uses of technology. No more than 15 percent of literacy providers use computers regularly for instruction, and many do not use them at all. Much of the available software offers drill-and-practice rather than creative applications; many products are geared to children and are not motivating to adults. Few literacy providers have sufficient technology for broad sustained use. Staff and volunteers have limited knowledge and training in the use of technology as a teaching tool.
- Consumer electronics and broadcast technologies are surprisingly underused given their familiarity and availability. Even with the explosion in cable, public, and commercial channels and widespread ownership of television sets, only a handful of video programs target adult literacy. Common electronic devices, such as home video game machines, are largely ignored as technologies for literacy.

OPTIONS FOR CONGRESS

OTA's report presents several options that would significantly expand use of technology and increase the opportunities for adult learners within the existing system of adult education and beyond. Examples of these options include:

- *Eliminating impediments to the use of technology* in existing laws and regulations, adding new provisions explicitly encouraging technology, and enacting directives for interagency cooperation on technology planning and use in literacy-related programs.
- *Providing funds for hardware and software acquisition* directly through new Federal grants to local literacy programs, and leveraging this Federal investment by requiring matching local, State, or private funds and by encouraging community-wide technology planning and cooperation across Federal programs.



PHOTO BY: JEFF HEGER

Workplace
literacy
training

OTA REPORT *brief*

- *Stimulating development of adult literacy software and programming* through an initiative that encourages public/private partnerships among literacy educators, State agencies, software developers, and telecommunications providers, similar to the approach taken by the Star Schools Program for K-12 distance-learning activities. High-priority needs could be identified, such as English as a second language, high school completion, workplace literacy, materials for learners with very low literacy skills, and programs designed to reach both adults and young children in family literacy contexts.
- *Expanding training and professional development opportunities* for literacy staff and volunteers through technology such as telecommunications and distance-learning networks. By encouraging the major lit-

eracy-related programs (e.g., Job Training Partnership Act, Adult Education Act, Head Start, and JOBS) to pool their expertise and share the costs of development and technology, limited program resources could go further. Support for teacher and volunteer training and certification in adult literacy could thus be increased.

- *Encouraging experiments with personal electronic learning devices, telecommunications networks, and multimedia systems.* This should be a priority within the adult literacy research community (e.g., the National Institute for Literacy and the National Center for Adult Literacy) as well as other educational research initiatives. Congress could also include adult literacy as a priority area for new advanced technology initiatives.

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