Technology in Adult Education Programs

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Technology is used in adult education programs for management, instructional support, and direct instruction. The chronology for technology acquisition usually follows this same pattern, with management functions occurring first.

The Uses of Technology in Adult Education

Management

In a survey by the Office of Technology Assessment, “All of the technology-using programs surveyed . . . reported using computers for administrative purposes, such as general correspondence, registration and scheduling, record keeping, budgeting and payroll, student tracking evaluation and planning, and mandated reports” (Sivin-Kachal and Bialo 1992, p. 53).

Most adult literacy programs, whether ABE/GED, community based, volunteer, or institutional, begin using computers to maintain records on learners for state reports or local funders. Electronic transfers of information are increasingly supported at the state and federal level. Both financial information and state reporting can be supplied in a timely fashion, eliminating the need to generate paper documents.

Websites have been created by federal, state, and local governments to facilitate accessing information for grants, legislation, and events. Increasingly, legislative bills can be sent electronically to literacy programs for review prior to voting. Politically active literacy networks have flooded fax machines and e-mail boxes in attempts to communicate with legislators.

Microcomputers are used to maintain student test scores, records, and grades. Literacy councils may use computers to facilitate student-tutor matching through zip codes maintained in databases.
Word processing is used extensively to send letters to tutors and students in a standardized format in nearly all literacy programs.

The use of publication and presentation software is increasingly found in literacy programs. Newsletters are developed using desktop software with digitized photos. Access to more sophisticated technology is often through someone's personal equipment that is shared by a tutor or teacher working at home or at their business.

Networks of tutors, teachers, and learners are becoming increasingly common. Although some literacy programs have been networked for many years (the State of New York’s Literacy Volunteers of America programs, for example), others are just beginning. Issues of maintaining chat rooms, finding viable topics for conversation, and technical problems are the same for literacy users as they are for the rest of the world. Finding the time to research websites, prepare materials, and respond to queries are issues concerning literacy practitioners.

**Instructional Support**

The generation of materials and resources to be used with learners is called instructional support technology. Word processing is used to generate tests and text materials for basic literacy instruction. Games and crossword puzzles requiring the use of a printer allow teachers to enrich their teaching by supplementing instruction with computer-generated materials. These can be designed specifically for an individual learner's needs and personalized by the addition of the learner's name. Readability formula software packages that establish grade levels can be applied to materials learners bring in to read as a means of determining appropriate teaching strategies. In classes, integrated learning systems (ILS) and software packages generate personalized worksheets that can be given out as a homework activity.

The computer can be used to facilitate the instructional process by supporting staff development activities. Brainstorming software is used as part of workshops to generate new ideas. Another use of the computer is to record key points in small- or large-group discussions. The notes are then given as a report to all participants at the end of the workshop. Teachers can develop curricula across time and space by sharing materials over the Internet. Production of instructional materials, sharing of resources, and creation of learner forums are all activities in which literacy practitioners are engaged.
Technology supports the instructional process in testing. Scoring of tests, generation of random items, and creation of tests can all be done with a computer. Centralized scoring of GED tests has increased the possibility of data maintained and shared across time and space among programs. Systems such as CASAS (Comprehensive Adult Student Assessment System) also provide models for systematic data collection through technology. ILSs have long been able to generate test data that provide learners with profiles on their progress as well as generating aggregate data for program reporting purposes. Standardized tests such as TABE (Test of Adult Basic Education) and the GED are also available in computerized form.

Direct Instruction

Direct instruction occurs when a learner uses technology, usually a computer, to learn. In most adult literacy programs the use of the computer is supplemental. An Office of Technology Assessment survey found that “most programs are using computers principally as a supplement to a traditional program of classroom-based instruction” (U.S. Congress 1993). A common configuration in a classroom is to have the computers located in the back or at the side of the room, usually in a row. If possible, a second room is added to create a computer lab. At least one printer is available to generate hard copies. Increasingly, peripherals are attached to provide sound, scanning, and video capabilities.

The least frequent application of technology, although often the most discussed, is where technology is the primary means of instruction. In this situation a computer lab with at least one ILS is employed. Commercially available ILSs as well as standalone computers and other technologies are used. Even where technology is the primary means of instruction, there are always teachers or tutors, books, paper and pencils. In addition to the ILS as a technology delivery system, most vendors also supply support materials in the form of videos, workbooks, worksheets, and/or tests. Technology has never been used as the sole deliverer of instruction in adult literacy programs, except perhaps in an administrator’s or vendor’s mind.

Development of a total curricular system using technology requires a substantial financial investment. The advantage of an ILS is that of offering a “turn-key” operation, ideal for a new program or site.

A “turn-key operation” is one that enables a literacy provider to purchase all services from one vendor and establish a fully opera-
tional lab at the outset. Technology used as the primary means of instruction can provide an instructional management and tracking mechanism that was previously unavailable in adult literacy programs. The ability to provide individualized instruction while collecting aggregate data for reporting purposes is a major advantage. Experimental systems have been developed in the past, primarily on mainframe computers by universities and the military; however, these have not been available to the general public. The systems that currently exist commercially are a combination of ILSs and curricular packages.

Many technology specialists believe that the use of ILSs is destined to be a passing phenomenon, making debate about their merits a relatively moot point. Indeed, the inclusion of third-party software at the literacy programs’ request and increased capability of the ILS to be customized for user needs has challenged many of the traditional assumptions of what an ILS can and cannot do. Now, the delivery of ILS curriculum via the Internet and ultimately through platforms such as Java changes the entire structure of the ILS. Soon we can expect to see curriculum delivered on demand that is learner specific, without losing the capability of generating individual and aggregate data for reporting purposes. In fact, there is every likelihood of greater sharing of data across programs to arrive at new understandings of how learners learn through technology.

**Programmatic Uses of Technology**

In order to understand the use of technology in adult education instruction, the larger context must first be recognized. Although all adult education programs provide basic skills instruction, individual programs vary widely in their mission, funding, clients, curriculum, evaluation, and general operation. Largely due to the institutional context and historical origins, adult education programs set boundaries for their service delivery. This section describes the context for technology use and current issues in four program categories: ABE/GED/adult diploma, ESL, work force literacy, and family literacy.

**ABE/GED/Adult Diploma**

Adult basic education is the single largest provider of adult literacy services in the United States. ABE programs provide services to
adults 16 years of age and older, who are out of school and functioning below a high school completion level. Funding is federal, administered through the state, and often combined with state and local dollars or other sources of revenue. ABE programs are likely to provide GED instruction as well, in order to provide a full range of options for learners. The Test of General Educational Development has offered an alternative to the high school diploma in the United States and Canada since 1942.

Since most instruction in these type of programs is individualized within the classroom, the use of computers varies markedly from program to program, and teacher to teacher. Technology is viewed by most teachers as supplemental to the regular curriculum and used as a resource when it fits into the individual learning plan of the student. Technology is frequently a mix of current software and obsolete hardware. It is not uncommon to find a multimedia encyclopedia sharing a work table with Apple IIEs or PC Juniors. It is less common to find Internet access and modems in use.

The GED has a long history of seeking technological solutions for delivery of services. Kentucky Educational Television has been delivering the KET/GED series on broadcast television since the early 1970s. The original format has been expanded to include telephone and correspondence support, videotapes, and interactive video capability. Available as “Beyond Words,” the KET series works on networked or standalone platforms (see KET 1992). More recently, GED instruction is being offered through the Internet. Projects such as Mindquest are exploring the potential of delivering GED instruction in multiple formats.

In addition, most classrooms have VCRs, often with instructional videos. Audiotapes and tape recorders, as well as older technologies such as language masters or controlled readers, are also used extensively in most ABE/GED classrooms.

Adult diploma programs, sometimes known as Adult Secondary Education (ASE), programs are a fairly recent phenomenon. An alternative to the GED, these offer a high school diploma as a credential rather than the GED certificate for passing five tests. To the degree that adult diploma programs are integrated into the regular district offerings, access to technology and other district resources is less a problem than for other literacy programs.

A major concern currently confronting all of these types of programs is the growing need for accountability. Technology provides good news and bad news in this area. The bad news is that
programs will often purchase an ILS specifically because of the data it will provide on learner progress. The data are intended to be used to justify the program’s existence. When claims made cannot be fulfilled, both learners and funders are frustrated.

The good news is that technology does promise the means for resolving the current conflict between authentic assessment and accountability. The demand for accountability in adult basic education is a theme currently found in state and federal legislation, articles, and public documents. Likewise, the private sector is increasingly reluctant to put dollars into adult literacy programs where outcomes cannot be substantiated and the population is highly transient.

Finally, finding an appropriate location for tutors, teachers, and learners to meet is an ongoing problem for all adult education programs, especially programs dependent on volunteers. Home delivery of instruction through newly developing camera/computer technologies such as CUSeeMe offer the potential for matching tutors and students across time and space. Many seniors and people with disabilities would be delighted to share their instructional expertise if they could remain at home. Mechanisms that would allow volunteers to operate within the safety and convenience of their homes, while affording learners increased privacy and ease, are very appealing. Learners can be in prisons or remote areas and still find high quality tutoring through Internet and distance delivery.

**English as a Second Language**

Some of the most interesting and creative uses of technology are to be found in ESL programs. These programs may be part of a larger ABE/GED project or exist independently as part of a community-based organization. Frequently, the creativity is a result of necessity because software does not exist to meet the diverse language and literacy needs of learners.

Technologies such as tapes, language masters, learning labs, radio, and television have long been used in English language training, where oral language and sound are essential to the instructional process. Newer applications are a result of the development of high quality sound systems for the computer with authoring capability. Teachers and tutors now use software packages with sound to teach correct pronunciation; a learner can hear her voice in comparison with a standard. The standard may be part of the software package or authored by the teacher. Authoring packages provide
programs with the flexibility needed to create instructional exercises in languages specifically for English language learners.

Closed-captioned television is also used by immigrants to learn the English language. This method has been used instructionally in a limited way, but holds great promise for the future when all televisions have closed-captioned and/or interactive capability.

One of the most successful uses of the Internet in adult literacy instruction is in the area of ESL. Learners can find websites from their countries of origin and can keep up with current events in their native country. In some cases they have been able to connect with relatives, providing an immediate benefit to attending literacy classes. Of equal value has been the education of teachers who can learn about the countries of origin of their students. In urban literacy programs with learners from many different countries, it is virtually impossible to have intimate knowledge of all learners’ homelands. Through webpages and e-mail teachers are learning along with their learners and can better customize instruction to learner needs and interests.

Online chat groups and websites devoted to serving the needs of a specific population are a growing phenomenon. Although designed with communication rather than education as a purpose, these technology forums provide mechanisms to tailor ESL instruction in new and creative ways. It is to be hoped that new technologies that connect people around the globe will afford increased options for learners to learn English in ways that have yet to be fully conceived, much less employed.

Virtual reality has also been used in ESL experimentally to create “literacy worlds.” Telecommunications enables learners to access databases, form networks, and correspond electronically. Educators stress the need for real purposes for learners to use the systems and the difficulty of integrating online usage into the curriculum, a view supported by educational research in K-12 programs.

**Work Force Literacy**

Work force literacy refers to basic skills instruction that is conducted for those currently employed, seeking employment, or changing employment. It is usually, but not always, conducted at a worksite. Also known as workplace, work site, or employment training, work force literacy has a long history under many different labels. Major work force literacy programs are also offered in union halls and as part of an existing ABE or community college program. Vocational
schools offer basic skills instruction as part of their preparation for the job market and through customized training for companies.

Unlike some educators who are resistant to technology as a primary means of instruction, employers frequently seek a technological solution first. They are impatient and easily succumb to promises of “2 grade level improvement in 30 hours of instruction.” This has led to difficult situations in which literacy providers are asked to provide support services for technology that they did not want. ILSs are frequently found in work force literacy programs because they provide the data employers want, allow flexible scheduling, and quick solutions.

Far more difficult to achieve and desperately needed are technological solutions that are grounded in the functional context philosophy of most work force literacy programs (Park 1987). Functional context literacy supports the notion that for basic skills instruction to be meaningful and lasting, it must be delivered within a specific context, such as the requirements of a particular job (Sticht 1988). Technology in the form of video, computer software, and tapes is currently used to provide the type of functional context instruction required in the workplace. The ability to customize a curriculum for each employer and employee has yet to be developed. Unfortunately, this application of technology rarely occurs. In some cases there is simply not enough expertise in the dual worlds of literacy and training to develop a functional context curriculum that would employ the latest technology. In other cases the limitation is in the technology itself where software development lags behind instructional demands.

Family Literacy

Family literacy programs continue to grow in popularity and are often found as stand-alone projects. Although definitions and program design differ, family literacy programs share a common belief that literacy issues must be addressed through the unit of the family, not the child or adult. They believe that breaking the cycle of illiteracy can be done only through an intergenerational approach in which children and adults are taught simultaneously.

Most programs involve three component parts: instruction for the child, instruction for the adult, and instruction for the parent and child together. Technology can be used to support the instruction for any or all of these strands. The use of technology varies markedly from one family literacy project to the next; however, many use technology for some portion of the program.
Family literacy programs use technology in as many different ways as families use computers. Where an ILS is available, several family members can work on basic skills together by having several head-phones attached to the computer. This is particularly useful in learning English. Another common application is the creation of letters, greeting cards, and banners, allowing a parent and child to work together on the project. Other software programs that work well for intergenerational activities are those that create toys or games. Children and adults can work together to design a product that will benefit another family member. Genealogy packages have also been used in family literacy programs to trace family roots and transmit stories from parents to children.

The Internet has allowed family literacy projects to share information across programs. One of the first applications was to connect parents in a network support group to discuss child rearing issues. At the National Center for Family Literacy, electronic bulletin boards were used to facilitate parent-parent, child-child, and teacher-teacher communication. Teachers and parents became increasingly frequent users of the system, sharing curricular issues, parenting needs, and recommendations for conducting successful family literacy activities with each other. Another project between Oregon and New York encouraged parent communication, not only on child-rearing issues, but partnering for parents in completing their GEDs.

In volunteer literacy programs, video and audiotapes are used effectively in family literacy programs to support parents with beginning reading skills. The Reading Rainbow television series and Walt Disney tapes are used to teach parents how to read to their children. Parents can hear and see the story using technology to enhance their understanding of the plot. Small-group instruction provides support for parents on how to read the story, as well as the words they will need to know. Some programs provide portable, take-home computers, for parents to use with their children as part of a language development process.

Electronic education for an entire family is a discussion topic at many education, technology, and literacy conferences. There is a lack of vision on how to go about doing it. The experiences of Sesame Street and KET show that it is possible to educate a segment of the population through home delivery of instruction.
Final Considerations

The most recent developments in the area of technology call into question many assumptions about adult education, as learners begin to use the computer for communicating and accessing information electronically. Multimedia, telecommunications, and incorporation of the computer into other tools (such as glasses, notebooks, and calculators) create a very different image of what adult literacy instruction could be, and many hope, will be. Adult literacy practitioners need to be in the forefront of determining how evolving technology will be employed to achieve literacy goals. Clarity of vision and advocacy are needed to ensure access to new technologies, development of appropriate content, and new models of instruction.

Access to New Technologies

Historically, literacy programs have been the last to access a new technology. This is principally due to lack of funding for the literacy field in general. However, it has also resulted from a lack of demand and vision on the part of literacy practitioners. Failure to conceive how new technologies could be used in the classroom or tutoring situation often results in their arrival in literacy programs at the point when they were being discarded as obsolete by other educators. To be at the forefront of advocating for new technologies in the literacy field, practitioners must be able to articulate what the potential of the new technology is for their learners. Visioning and dreaming are best carried out by observing the fields of entertainment, military, or business, where new technologies are most likely to emerge.

The questions practitioners should ask when encountering a new technology (for example, when ordering video breakfast in a hotel, or seeing holographic images on a pen) are—

1. What could this technology do for my students?
2. How could it be adapted and used for a literacy purpose?
3. What would it take to make the adaptation?
4. Who can I talk with about this need?
Development of Appropriate Content

There is very little software designed specifically for family literacy programs. Consequently, software must be adapted for the activity. Many of the new technologies provide electronic connections without any content. As one instructor cynically remarked, "When we all get hooked up, just what are we going to talk about anyway?"

Public broadcasting now has 499 additional television channels, many of which could be used for educational purposes. As Linda Roberts, former Senior Policy Analyst of the Office of Technology Assessment said, "Does the world need 499 shopping channels?"

The same question has been asked regarding the value of the Internet for literacy instruction. In one literacy program a student desiring to purchase a used car spent 1 month reading classified ads as part of his reading class. The issue debated by staff was whether this was valid preparation for the GED and whether a policy should be established limiting this type of access.

Without vigorous debate on these issues, decisions will be made by legislators, vendors, and technology purveyors. If adult literacy professionals have not thought through content issues, then someone else will, and content will be predetermined and prepackaged by those without an understanding of the literacy field. Literacy practitioners must be in a position to answer these questions:

C How should content be determined for the new technologies?

C Should learners make the decisions in light of their own individual learning plans? Or should accountability drive the decision ensuring an outcome of GED, high school diploma, or English acquisition?

New Models of Instruction

Our students are less and less able to perform the old print rituals—to read, or analyze, or write with clarity and purpose. Everything that they encounter in the world around them gives the same signal: that was then, and electronic communications are now. (Birkerts 1993, p. 105)

Changes in the meaning of "literacy" have profound implications for literacy practitioners. The death of the printed word and emergence of the symbolic era have been forecast by many. Whether this ever occurs is beside the point. The potential and the reality
for many learners is the ability to learn through a variety of new modalities that are multisensory and multidimensional.

The issue is less one of technology, than of literacy itself. Adult literacy practitioners must be thoughtful in their approach to knowledge and how instruction is to be delivered. When constructing future scenarios for learning the emphasis can no longer be on the teacher/learner relationship with a view of technology as “just a tool.” This permits practitioners to remain naive, ultimately asking the wrong questions, such as “How can we get students to come to class?” instead of “How can we deliver instruction without a classroom?”

New models of learning will occur as practitioners become comfortable with new technologies and less dependent upon learners to meet their emotional needs. Adult literacy practitioners need to debate and reflect upon how new instructional models can be created that actually place control in the hands of the learner, while providing the certification and validation necessary to achieve specific goals. Questions that need to be discussed are—

C How can we facilitate learning in any time and any place?

C What kind of support systems need to be in place to ensure a successful learning experience?

C How can independent learning be validated and certified?

C How can the new media of chat rooms, e-mail, virtual reality, and others yet to be conceived best be employed in the literacy context?

A great educational philosopher, Theodore Brameld, once said, “There are times when the most practical thing one can do is become theoretical.” This is such a time. Many of the issues confronting the field of adult literacy and technology will not be resolved through technological solutions. Rather, they require practitioners who are thoroughly grounded in adult education, learning theory, assessment, curriculum design, and evaluation to reflect upon issues of practice. The time for debate is now; the solutions and resolutions of technology/literacy issues lie in the future.