Access and benefits: Assistive technology in adult literacy

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Supported access to assistive technology can create opportunities for adult literacy learners to strengthen skills, improve computer literacy, and reinforce self-determination.

If literacy education is principally about “building access to literate practices and discourse resources,” as Luke (2000, p. 449) described, then the benefits derived from literacy learning should ripple through the educational community as new voices are heard and new powers are set in motion. Adult literacy instruction has the potential to be a site of such empowering literacy, but adults with learning disabilities (LD) struggle to locate the access points necessary to benefit from adult basic and literacy education (ABLE) instruction.

This project explored the efficacy of supported access to assistive technology (AT) for adult students with LD to improve their literacy skills and goal attainment as a supplement to regular adult basic education classes. Specifically, the project investigated whether an increased engagement with the multisensory presentation of print through text-to-speech and speech-recognition software could improve participants’ literacy skills and sought the answers to these questions through careful observations as well as reflective dialogue with the learners.

Surveying the gaps

The fellowship from the National Institute on Disability and Rehabilitation Research, which funded this project, was entitled Bridging the Gap, but in reality, the gaps in service and research are multiple. Here, one gap is explored in detail: the gap between secondary and postsecondary research on learners with LD and the adult education students who have been left out of that research.

Within the growing body of research on adults with LD, the bulk of existing research has bypassed adult literacy learners and is heavily biased toward the postsecondary population. Longitudinal studies of adults with disabilities, such as those reviewed in Levine and Nourse (1998), have much to tell us about how adults with LD fare in the general society, but they also leave many questions unanswered. The studies document a persistent lag in economic, social, vocational, and educational achievement of adults with disabilities compared to their nondisabled peers and significantly higher risks for confounding mental health and physical health stresses (Hooper & Olley, 1996). Most longitudinal studies, however, are conducted with high school graduates. The National Longitudinal Transition Study of Special Education Students (Wagner, D’Amico, Marder, Newman, & Blackorby, 1992) is the major exception. Furthermore, even for...
studies that include students who drop out of school, there are significant numbers of initial respondents who drop out of the data sets for later follow-up.

High school noncompletion rates of U.S. students with learning and emotional disabilities in the 1999–2000 school year were 27.6% and 51.4%, respectively (Office of Special Education Programs, 2002). White students with special education status graduated high school at rates higher (62.5%) than minority students (49%). This echoes U.S. trends showing that students from poor and diverse families also dropped out of high school in 2000 at rates significantly higher (28.9%) than the national average of 10.9% (Kaufman, Alt, & Chapman, 2001).

In the National Longitudinal Transition Study, begun with data from the school year 1988–1989, 41.7% of the students with LD left school without graduating. Within the five years of the follow-up, 30% of those students had returned to some adult education setting, but only 3% of them had attained their General Equivalency Diploma (GED; Wagner et al., 1992). Youth and adults with disabilities are found to be less likely to earn a GED than nondisabled peers (Marder & D’Amico, 1992). In addition, school-identified LD rates show a strong gender bias that is not supported in clinical reevaluation studies (Shaywitz, Shaywitz, Fletcher, & Escobar, 1990; Vogel, 1990), adding a layer of gender imbalance in the diagnosed LD population as well as ambiguity for many women who struggle with learning and literacy.

Taken together, these statistics show that the postsecondary population with LD studied previously is more likely to reflect a mainstream and male perspective, leaving a gap in the understanding of ethnically diverse, poor, and female experiences. Adult education students with LD need attention paid to their unique learning needs so that they may access the health, civic, and economic benefits associated with improved skills and credentials (Sum, Kirsch, & Taggart, 2002; Tyler, Murnane, & Willett, 2000), but identifying and recommending effective practices is still a work in progress.

**Multiple realities**

Bridging the gaps in adult education for students with LD necessitates asking difficult questions of access. Questions arise regarding who benefits and who should benefit from adult education (Cervero & Wilson, 2001), and to what they gain access. The quality and relevance of instructional materials and practice are strongly tied to student outcomes, yet these materials and practice are notoriously inauthentic and decontextualized (Purcell-Gates, Degener, Jacobson, & Soler, 2002; Sheehan-Holt & Smith, 2000). And what does LD mean in adult education? Is the field meeting legal and ethical obligations through service and professional development (Corely & Taymans, 2002)? Searching for answers reveals the lack of research as well as disappointing realities for practitioners and students.

This complexity illustrates the “multiple realities” Labbo and Reinking (1999) forwarded as a productive perspective for studying the intersection of technology and literacy instruction and learning. They emphasized that what we choose to study in this busy intersection and how we design our investigations reflects our understandings of what is important and relevant for the future of literacy instruction and a literate citizenship.

**Literacy and technology**

How adults learn to read or improve limited literacy skills is not well understood. Very much like Labbo and Reinking’s (1999) busy intersection, the models and theories constructed of adult literacy reflect various “lenses” and “shutter speeds” aimed at different elements as they pass through literacy research. A slow-frame understanding can be gleaned from the careful skills-based work of stage theorists documenting how adults acquire skills in stages that build sequentially, often taking years to master. Researchers studying reading and
LD often take a neurological, microscopic view of students’ brain function, measuring growth and deficits in the areas of phonological awareness, visual perception, fluency, memory, and attention. Critical literacy theorists document the social drama that unfolds when adult students engage in social actions and join them in the literacy–technology intersection in protest. Literacy practice theorists link arms with adult students and accompany them, documenting literacy tasks, barriers, potholes, and negotiations adults navigate as they pass through the intersection. Studies investigating how technology can assist adults to develop or transform literacy and empower themselves are almost nonexistent.

Through it all, the reflective voices of ABLE students are often muted, masked, or clipped. It is rare for a study to engage students in the vocabulary and models of literacy theories to hear how they think about their own learning (notable exceptions include Fingeret & Drennon, 1997; Purcell-Gates, 1995; Viise & Austin, 2005). I was able to do this in a participatory action research (PAR) project (Silver-Pacuilla, 2003) the year prior to this study. Through a yearlong series of monthly focus groups, female literacy learners with disabilities engaged in a process of dialogue and reflection on the social construction of disabilities, gender, and literacy. The participants spoke to multilayered situationally and temporally specific aspects of literacy, indicative of the complex social and personal situations in which literacy plays a role. They demanded effective instruction that met their unique learning needs; for the women with LD, this was systematic, direct, multisensory instruction. They also demanded the right to work on material that was content rich and repeatedly requested access to and training on AT to help them reach their individual goals.

These women’s commitment to learning literacy simultaneously in multiple modes and at various speeds challenges us as practitioner-researchers to continue studying how ABLE programs can meet these needs, given the realities of funding, teacher training, program structures, and adult lives that make regular attendance and self-study difficult. The multiple realities perspective reinforces the awareness that we have as practitioners that instructional settings are specific and changeable. Research conducted in collaboration with students in specific situations is more likely to be applicable and relevant, thus bridging the multiple gaps and mapping the access points more effectively. This project reveals complexities and possibilities side by side in the intersection of adult literacy and technology learning.

**Project design**

A multilayered design generated a mix of data with which to profile and situate the participants: as adults with richly lived histories, students in adult education classes, new learners of AT, reflective adult learners, and students working to improve their educational environment.

**Participants**

Students were recruited from an adult education program that is a division of the local community college in the metropolitan southwest region of the United States. Although 18 students with diagnosed or self-reported LD participated, 10 students participated for at least 10 weeks and completed the full battery of assessments. Ages ranged from 19 to 62 years old, with an average age of 35; all were native English speakers except for one woman who was adopted from Latin America as a young girl. Eight of the students were women and two were men. Two students (the oldest two) were African American, three were Hispanic, and five were white. Names here are pseudonyms.

Seven of the students had been diagnosed with LD in elementary school and most could provide at least some documentation; six had at least one other diagnosis, including depression, bipolar disorder, attention-deficit hyperactivity disorder, attention-deficit disorder (ADD), and epilepsy. One woman was evaluated and diagnosed with LD
and ADD during the project. The two oldest stu-
dents had been in school before the days of special
education and the identification of LD; they self-
identified as having LD based on their learning his-
tories in elementary and secondary school as well
as the difficulties they experienced with learning in
adulthood. All documentation of LD indicated that
determinations were based on a discrepancy for-
mula particular to the school district, and all 10
students showed the pattern of at least average in-
telligence and language-based difficulties.

Four of the 10 students were high school
graduates. Five of the 10 students had completed
10 or 11 years of schooling; only one had not at-
tended high school at all. The group represented a
range of time in the current adult education pro-
gram from 3 months at the beginning of their in-
volve with the project to more than 10 years of
attending literacy and GED classes, with an
average time in the program of 2 years. Their
literacy levels placed them in the range from pre-
literacy skills to GED test-takers. Their computer
literacy levels ranged from experienced (using
e-mail and word processors daily) to novice. The
time invested in using the AT and participating
in the project ranged from 10 hours to 48 hours
per semester, with an average of 16 hours per
semester.

**Equipment and settings**

All participants attended classes weekly, at various
schedules and sites, and at a level determined by
their Test of Adult Basic Education scores. They
also attended 90-minute sessions with AT once or
twice a week. These sessions were either held at
nearby community college campuses where we
had access to AT labs attached to the Disabled
Student Resource (DSR) Centers or, at one center,
in a tutoring room on a mobile AT station loaned
from the DSR office. The stations were equipped
with late-model computers installed with
Windows 98, Microsoft Office 2000, high-speed
Internet access, and a variety of software packages,
including Kurzweil 3000 and Dragon Naturally
Speaking version 6. Scanners and printers were
networked to these stations. Similar stations were
available in the college libraries, and participants
were taught how to use them. We also used my
own older laptop with Windows 98, Microsoft
Office 2000, a 56K modem, and Dragon Naturally
Speaking version 5.

Participants primarily used Kurzweil 3000,
Microsoft Word, Dragon Naturally Speaking, and
the Internet. Kurzweil 3000 is a scan-and-read
program with many built-in and adjustable re-
sources (e.g., large variety of voices, reading
speeds, electronic dictionaries and syllabication
guides, colored highlighters, ability to create and
extract text notes) that can be displayed as icons
on a toolbar. Textbooks and other print materials
can be scanned in, displayed on the screen, and
read back with synthesized voices. The Read the
Web feature activates the text-to-speech (TTS) on
e-mail and webpages. The program also has a
built-in word processor that is supported by TTS
and a spellchecker. Naturally Speaking is a voice
recognition program that, after initial training,
can transcribe a user’s spoken language into a
word processor (we used Word). Versions 5 and 6
are continuous recognition programs that func-
tion best with phrase or full sentence input and
have a TTS engine. There are a variety of correc-
tion and retraining options.

**A typical session**

Lab time was supplemental to the participants’
class work and personal literacy needs—a stance
that allowed me to learn what the students were
doing in their adult education classes, what they
were finding difficult, how they thought they
needed to supplement that instruction, and how
they used the technology to express themselves. A
typical session might start with students checking
and sending e-mail for 10–15 minutes. Each stu-
dent was encouraged to sign up for a free e-mail
account if they didn’t have one already and sev-
eral found Web services from which they received
weekly or daily bulletins. Students might then ex-
plain a literacy task they wanted to accomplish
and discuss their approach to the task and what
help they might need from me as the coach. The bulk of the session, 35–45 minutes, was spent scanning, reading, and annotating text with Kurzweil or dictating and composing with Naturally Speaking. Students printed their work for further study or revision. We ended each session with a brief 5–10-minute documented reflection (audiotaped, typed, dictated, or e-mailed) about challenges and accomplishments. Field notes, work samples, and photos were collected at each session.

**Data collection and analysis**

A variety of data were collected according to the multiple layers of the design: (a) individual learning captured through case studies; (b) personal reflection, both in recorded reflective conversations and through written reflections; (c) focus group dialogues that discussed the project and personal responses to the experience; (d) group social actions (in this case, giving workshops for adult and K–12 educators); and (e) role of the researcher (here, the role of the “coach” in the learning environment). These components represent the enfolding of individual reflective learning into group reflective learning over time that is the hallmark of dialogic research (Brydon-Miller, 2001). Data corresponding to each of the five components were collected and analyzed in an iterative process with the participants through the technique of the Unfolding Matrix (Padilla, 1993). Three layers are explored in this article: the underlying framework of dialogic research, a thematic analysis of students’ interactions with the equipment, and a thematic analysis of the role of the coach.

PAR is an excellent design for exploratory research when participants’ understandings and meanings constructed of the intervention or practice are key pieces of data to be collected. It is a design and stance that preserves hope within a language of possibility; conducts respectful inquiry into differences by examining lived experiences; creates new knowledge through inquiry conducted through dialogue; and engages participants to work toward social justice through practical, applied projects (Freire, 1970; Lather, 1991). The Unfolding Matrix (Padilla, 1993) blends Freire’s (1970) *Pedagogy of the Oppressed* with the principles of grounded theory (Glaser & Strauss, 1967) and is an excellent structure for PAR.

The Unfolding Matrix technique hinges upon the analysis and identification of contradictions experienced by the participants as a preliminary responsibility of the researcher. Contradictions are then encoded as dialogue stimuli and presented to a group along with a limited number of “cover terms” (key areas of inquiry) to start the matrix. The dialogue continues to unfold the matrix in two directions, by contributing interpretations below the cover terms and by adding more cover terms (see Figure 1). Participants are considered the experts on their own experiences and convene for focus dialogues, based on Freire’s (1970) “culture circles,” to decode the contradictions while the researcher takes on the role of facilitator of the discussion. Transcripts of the dialogues are the raw data of the second phase and are analyzed for embedded generative
themes that are returned to the group for further discussion.

The availability and supported explorations of the AT equipment were the contradictions presented to students in this study. The equipment and the learning were so unlike previously experienced literacy learning that they stood in sharp contrast to what the participants had understood “literacy learning” to be, creating a rich set of contradictions to decode. We began with questions for cover terms, exploring responses to “Are you reading if the computer reads to you?” and “Will you learn to spell if you use voice recognition?” Focus dialogues explored the meanings and realities of literacy, exposing the social nature of schooling and literacy. Personal feelings and past experiences were seen as similar to others’ from different locations, families, and even generations. The participants began to adopt a more reflective stance toward literacy.

Data collection using the Unfolding Matrix occurs simultaneously with three processes of qualitative analysis: “data reduction” as experiences and reflections are condensed into the matrix; “data display” in the matrix itself, which serves as a basis for thinking about meanings; and “drawing conclusions and verifying” (Huberman & Miles, 1998). The technique of the Unfolding Matrix can be used to capture data in ongoing themes from iterative groups while remaining responsive to new themes that emerge. For example, as a student reflected on his or her own learning, an insight already in the matrix could prompt further reflection and comment.

Extensive field notes were recorded immediately after each session to capture the interaction of the students with the equipment and the coaching support. Emerging themes identified from field notes, work samples, and sessions were shared with individuals and small groups as member checks and opportunities for further reflection. The groups’ interpretation of these themes in relation to the themes from their personal reflections led to further refinement.

Involving participants in the stages of analysis and dissemination makes visible the education-research-action connections of PAR (Brydon-Miller, 2001).

Students’ interactions with the equipment, captured mainly in field notes and personal reflection narratives, were categorized into the following codes:

• emotional response to learning;
• strategy learning;
• self-study, including leaving sessions with printouts;
• persistence, determination, and patience;
• the importance of matching equipment and features to students’ profiles.

Emotions colored our sessions with enthusiasm about the novelty and possibilities of the AT, frustration with impairments as they manifested in our sessions or were left over from other classes, and regrets over not having had such learning opportunities sooner. Participants reflected on the importance and great relief of finding an accepting community in which to express these emotions, revealing that even at home they were tired of talking about their school frustrations. Finding such a dialogic community with the opportunity to provide constructive feedback to the program and their instructors, they reported, strengthened their persistence and determination to achieve and stretch their goals. Other themes included the difficulties students had studying outside of class hours and the value toward self-study students felt in leaving the sessions with a printout of their work, a theme that included the infrequency with which this happened in other classes. The final code, matching AT features to students’ profiles, is explored in more detail in the Finding Bridges section of this article.

Analysis of the role of the coach, also captured from field notes and reflective journals, revealed the following key functions:

• teaching or prompting students to use learning strategies;
• making learning and mistakes explicit and visible for metalearning;
• teaching technology features and functions;
• offering suggestions for transfer to more traditional learning environments;
• creating opportunities to share learning with peers and instructors;
• serving as a “frustration buffer” for equipment and software.

The first five functions match a well-trained literacy tutor or coaching model with the addition of teaching computer literacy. These functions are equivalent to an “informal” level of coaching as described in the International Reading Association’s (2004) position paper on reading coaches when extrapolated to a participatory ABLE environment in which small groups of adult students are considered a primary constituent group, along with other tutors and instructors. Diminished in the role of the coach is direct instruction in skills: Coaching is focused on facilitating reflective learning, problem solving, identifying materials, sharing in workshops, assessing students, and helping students learn their strengths and needs. When adult students are engaged in a participatory learning process, the tutor or instructor can assume the role of the coach, which encourages students to take responsibility for their own learning and decisions. Specific skills can be taught explicitly in well-timed minilessons, with practice and guided feedback mixed into consecutive learning sessions.

The final function, however, was reflected prominently in the field notes. In nearly every set of field notes, I heard my own frustration and stress when equipment did not perform as expected, network connections failed, and time was lost to recoveries or switching objectives. I took the emergent finding to an early focus group, serendipitously held on a day when the printer would not print, and asked the participants if they were frustrated. One woman responded emphatically, “Well, it don’t frustrate me...[pause]...but I’m glad you’re here!” Another woman continued,

And then I think [if you weren’t here] we’d get stressed to where we can’t concentrate, we can’t really focus on what we’re here [for]. Yeah, in a way, we have to be independent, but if we hardly even know the [equipment], then....

Clearly, a coach who served as a frustration buffer was a necessary ingredient in the AT lab so that the students could stay focused on their learning.

Snapshots of literacy learning with AT

The following snapshots of the intersection of literacy and technology learning are extracted from more fully developed cases (Silver-Pacuilla, 2004), offering glimpses of technology-enhanced literacy learning for adults with LD and other disabilities.

Studying

Emma’s first session is indicative of how the AT was used to supplement classroom work. This young, single mother with LD and ADD was enrolled in a “fast-track” GED class that covered each of the five test topics in a 2-week, 16-hour block. She brought in her textbook and we scanned in a social studies passage. She reported that she had studied it the previous night but had not been able to finish the assignment. “I just read it and read it and read it,” she said. “I just can’t get anywhere with it by myself.” Through the headphones, she listened and subvocalized along with the passage on fuel consumption and then the comprehension questions and multiple-choice responses. She was still unsure of how to answer the questions. I asked her to return to the passage and highlight words she was not sure she could define. In the four-paragraph, two-graph passage, she highlighted fuel, fossil fuels, consumption, consumer, petroleum, natural gas, conserva-
tion, renewable, and many other words. After spending nearly an hour using Kurzweil’s electronic dictionary, discussing the definitions in context, making notes within the scanned passage, and rereading along with the TTS, she was successful with the questions. Without a clear grasp of the content-specific vocabulary, her study time the night before had been unproductive and frustrating.

Reading for pleasure

John’s story offers a glimpse of how accessible technology went home. A retired city worker, he was new to the adult education center, and his test scores were among the lowest. He lacked any familiarity with computers but was determined to learn to read and write in his retirement. John spent several weeks learning to use e-mail (he signed up to receive On this Day in History messages from www.encyclopedia.com), electronic references, voice recognition, and Microsoft Reader (free electronic book software with embedded study tools such as highlighters, annotation tools, and an electronic dictionary). He convinced his adult daughter who lived at home to install Reader on her computer. Week after week, he returned to tell me about the books he had read, downloaded from the University of Virginia electronic library. He thoroughly enjoyed Horatio Alger stories and could retell them in great detail. He spoke of evenings sitting at the computer, reading along with the highlighted text until he finished the book. He shared that these were the first he had ever read.

Literacy for self-expression

Frost is a self-taught computer enthusiast, using her home computer for e-mailing distant relatives and friends close by, searching the Internet, and playing games. She copes with depression and bipolar disorder as well as LD. She was attending a literacy lab class that is both a computer-assisted learning environment and a tutoring center. She thrived with voice recognition; it gave her an avenue to express herself in writing and bypass her spelling limitations. One day when the computer crashed, the following was part of her dictated journal entry:

Problems with computer technology

1. Computers are a pain in the neck!
2. Computers crash so easily it makes me want to throw up!
3. Computers who are learning to understand spoken language are knot heads....
   [on through 10 similar items]

This entry demonstrates the power of using voice recognition with the built-in formatting and auto-correct features of a word processor like Microsoft Word. Frost was amazed to see her words organized into a numbered list, capitalized, indented, and looking so professional. She printed it out to add to her notebook of schoolwork that she kept. Through the project, she created many short stories and funny entries and reports, as well as caseworker comments. She spent several sessions trying to locate definitions and descriptions of key terms using the electronic dictionaries in Kurzweil and glossaries on www.webMD.com. Her vocabulary list included tangential, psychomotor retardation, obtuse manner, aphasia, cryptic, and mannerisms. Ellie was driven to understand not only the specifics of the report but also the nuances and hidden agendas she felt were present at the hearing. She was determined to be a strong and informed self-advocate in order to navigate the social services for which she was eligible.

Literacy for advocacy

Ellie, a single woman who copes with uncontrolled seizure disorder along with her LD and who was enrolled in GED classes, brought a great deal of computer facility to the AT. The first literacy task she initiated was to scan in the transcripts and official report from her recent disability determination hearing. The report synthesized psychological, neurological, and medical exams and
enjoyed sharing them with her learning partners at the center. She began to consider taking creative writing classes at the community college.

**A reflective montage**

Through individual and group reflection on the learning process, these students and their peers indicated that they perceived the small-group coaching with AT as an enriched and empowering environment. They said they were “hungry” and “thirsty” to learn computer literacy and saw this project as an opportunity to combine literacy, computer, and Internet learning. Their experiences exemplify and contextualize the five “anchors” Labbo and Reinking (1999) suggested as key to researching in the literacy-technology intersection: The new technologies and the support to learn how to use them for literacy were made available and used to enhance and positively transform literacy instruction. They prepared students for the future and empowered them as learners and users of technology. Students were able to access and create materials that were relevant and interesting and were unlimited by their decoding, vocabulary, comprehension, or spelling abilities or others’ perceptions of their instructional literacy level.

**Finding bridges**

The research on secondary and postsecondary students with LD may not fit the experiences of adult education students. How educators can generalize information from the research that exists on the first two populations for use with adult literacy students needs to be better understood. This project shows, however, that when provided with appropriate support for literacy development, the students bridged the gap themselves between secondary and postsecondary educational environments and expectations.

Students began to reflect on their goals and stretch their understanding of what they could accomplish. Meeting students on the community college campuses and introducing them to the resources as well as personnel in the DSR centers gave them the confidence to imagine themselves as college students. Their goal directedness and self-determination—defined as feelings of competence, autonomy, and relatedness (Ryan & Deci, 2000)—were energized as they dreamed new or renewed dreams of further education. During and following the project, several students enrolled in college classes and availed themselves of the AT labs and accommodations through the DSR centers.

The students demonstrated that AT can help make self-study effective and rewarding in a way that they had never experienced. As in Reder’s (1999) interviews of adult education students, the participants in this study recognized the necessity of self-study in addition to their classroom instruction and reported attempts to study. They spoke early in the study about the benefit of time in the AT lab in order to study, relating home environments that were noisy and interruptive and literacy skills and strategies that were unproductive. When they came to use the AT lab, they were able to engage as the serious and motivated students they wanted to be. They were able to complete class assignments or personal tasks in an organized and strategic manner, effectively using the references embedded in the software with strategic prompting from a coach.

The importance of matching technology features and AT equipment to students’ strengths and needs as well as to the task at hand, a major finding of the students’ interactions with the AT, is a well-documented indicator of successful AT integration and adoption (Raskind, 1998; Wessels, Dijcks, Soede, Gelderblom, & De Witte, 2003). Mismatches lead to frustration, AT equipment abandonment, and task avoidance. Choosing software packages meant matching capabilities to the task and participants’ strengths. For example, students who wanted to write but did not have strong keyboarding skills (hunt-and-peck typists) or who had extreme spelling difficulties preferred to invest the time and energy in learning to compose with voice-recognition software. Students with more
fluent keyboarding skills were drawn to word processors with phonetic spellcheckers or word prediction that supported composition in a more familiar input style.

Knowledge of the features and use of the technology as well as students’ strengths and needs profiles is critical to successful problem solving in this area; these knowledge bases are not always present in a single coach, however. My training as a literacy and LD specialist afforded me an understanding of cognitive profiles and task analysis; I sought the expertise of AT and disability specialists to help make efficient technology matches. Structuring a supplemental AT experience in adult education requires access to these multiple areas of expertise; in our project, this was facilitated by our close coordination with the college DSR specialists.

Implications for practice

Small-group tutoring with assistive technology for students with learning disabilities can be enabling and empowering and can begin to bridge the multiple gaps in instructional practice and service. The participants guided the inquiry by self-selecting the literacy tasks and equipment, surprising me, each other, and themselves with where their inquiries and learning took them. These findings echo the work of Fink (1998, 2000) who found that “interest-driven reading was a key factor for the 60 successful adults with [reading disability]” (2000, p. 21) that she interviewed. Furthermore, she found that “highly interesting, personally captivating reading materials can provide the drill and practice necessary to create good readers...and...fluency and optimal literacy levels” (p. 28).

As emphasized by Freire (1970) and Purcell-Gates et al. (2002) in their literacy work, this project demonstrates that there is no threshold on the literacy levels, both traditional print and computer, of those who can benefit from supported access to AT as a supplement to ABLE classes. Even the students with the lowest literacy skills were able to learn, with coaching, how to access motivating and relevant materials. They demonstrated this by using their new skills and confidence on home or public computers, away from coaching support.

The findings from this exploratory study can only be considered as an outline of the complexity and possibility of literacy instruction with technology for students with LD. Raskind (1998) called for the use of AT “as an additional, supplemental approach to meeting the literacy needs of adults with LD” (p. 266). As shown here, supported access
created opportunities for adults to benefit from content-rich material, strengthen fundamental skills, improve their computer literacy, as well as reinforce their self-determination (Ryan & Deci, 2000).

In addition, program managers are encouraged to reconsider the elements of effective programs that serve students with disabilities (National Adult Literacy and Learning Disabilities Center, 1999) and establish partnerships with community agencies (several are highlighted in the box on page 123) that represent expertise and opportunities perhaps missing in the adult education program. When bridges are constructed between access points, we may be pleased to see students using them, bridging the gaps between service and practice and making their own ways forward and their voices heard.

REFERENCES


Reder, S. (1999). Adult literacy and postsecondary education students: Overlapping populations and learning trajecto-


