The Potential of Technology In Adult Basic Education:
Lessons from the PBS LiteracyLink Project

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In the 1990s the federal government invested millions of dollars in technology projects designed to improve education. While the majority of funding went to K-12 education, an award of $15 million dollars was made to the LiteracyLink Project (www.pbs.org/literacy) to create new resources for adult basic learners desiring to improve their job skills or get a G.E.D. Working from 1996-2001 a consortium of developers[1] created two multimedia educational programs: *Workplace Essential Skills* and *GED Connection.* Both series have video, print and on-line components. The video is still broadcast nationally on public TV stations. The online component is available to students 24 hours a day from PBS (www.pbs.org/literacy/). Videotapes and print-based workbooks are available from Kentucky Educational Television (www.ket.org/enterprise). Both series are designed for classroom and distance learning use.

Workplace Essential Skills (WES) is intended for ABE students needing help with workplace literacy topics such as finding and interviewing for a job, communicating with co-workers and customers, reading common workplace forms and reports, and doing measurements and calculations commonly required in the workplace. In the early 1990s these skills were identified in several policy papers as essential for improving the quality of the national workforce. Many adult education centers responded with ad hoc additions to their curriculum on several of these topics, but most did not have a comprehensive course such as *WES* as part of their regular offerings. *WES* was released in August, 2000. WES has 24 lessons, where each lesson consists of one half-four video, a workbook unit and an online unit.

GED Connection is designed for adults needing to prepare for the new GED exam that went into effect in 2002. It has 39 lessons that cover all of the content areas in the new test. *GED Connection* is the first multimedia curriculum series designed to cover all of the content areas on the new test. The series was released in October 2001.

LitTeacher. To enhance the professional skills of literacy teachers and administrators, LiteracyLink provides a "virtual" resource center that includes online training in technology issues and a rich menu of resources for literacy instruction (www.pbs.org/literacy, click on "Teach"). While most of the resources are available any time, the online courses are provided only to educators in states that contract with PBS for the service. Over the course of the project, five nationwide videoconferences were broadcast covering issues ranging from technology planning in adult education to characteristics of the GED 2002 test. Videotapes of the conferences are available.

Product Adoption

The LiteracyLink products are too new to know what their ultimate reach will be. Early indicators suggest they will be in strong demand. As of September, 2001 15 states had purchased a license to use *WES* videos throughout the state and nine states had purchased a license to use *GED Connection,* even though the materials were not yet available. In addition, eight states had purchased a license for the Online Management System that allows teachers to monitor the work of students who use the online system. Over 70 adult educators participated in the first *LitTeacher*

online course, "Creating a Technology Plan." The videoconference entitled "GED 2002: Everything You Need to Know" was delivered live at 827 downlink sites reaching about 9,000 people during the live event. It is estimated that an additional 13,000 people saw the conference on videotape.

Learning Gains for *WES*—Test Results

A summative evaluation of *WES* was conducted in Fall/Winter 2000/2001.[2] A pre-post design was used in 14 adult education agencies across the country. Nineteen teachers taught classes covering one or more strands of *WES:* employment (8 units), workplace communication (7), workplace reading (4), and workplace mathematics (5). In the field test, students were exposed typically to six hours of instruction per lesson. Measurement included a combination of nationally standardized CASAS tests (where existing CASAS tests matched the content of *WES*) and tailored tests where no group-administered standardized measures existed. Some of the results:

- **Workplace Reading & Math.** The greatest gains were seen in workplace reading and math; 40% of the students in the evaluation made substantial gains on standardized tests of reading and math in a relatively short period of time. On the other hand, 60% of the students made little or no gain, indicating that good materials are no guarantee that all learners — especially adult students with weak learning skills — will profit from them without careful guidance from teachers.

- **Job-Seeking Skills.** Students who knew little about job applications, preparing a resume, and composing a cover letter gained skills in these areas. One-quarter of the students increased their job-seeking behaviors while studying the employment units. This includes going to the library to get information about jobs, preparing or updating their own resume, sending their resume to an employer, responding to help-wanted ads, and securing a job interview.

- **Workplace Communication.** In workplace communication, students learned to recognize good practices in written communication — appropriate use of memo, letter, and other formats used in business communication, though they did not improve their skills in producing such written forms or in being able to extract information from them. Gains were small in recognizing good practices in non-verbal communication.

Learning—Smaller But Important Effects

Creating Awareness. In one site *WES* was used in a Welfare-to-Work program. The students were all middle-aged women from low-income households with very limited work experience. In their typical shopping experience they had rarely been treated with respect as customers, yet many of them were hoping to qualify for positions as sales clerks when they finished the class. The Communication videos emphasize the importance of listening carefully to the customer—both their words and non-verbal cues—and always trying to respond to their requests. Comments of disbelief from many of the students indicated how unusual they found this idea. The teacher spent several classes helping the students practice responding politely to demanding customers. In another site the students were recent immigrants. They were well-educated in their native country, but they also found the customer satisfaction emphasis in American business to be unusual. These students studied the videos to find the exact phrases to use when responding to customer requests.

WES as a prelude for job training. WES may have a special role to play in complementing job-specific career training. In one adult education center a group of 19 adults whose scores fell just below the entrance requirements were given the opportunity to study the *WES* employment and workplace math strands for six weeks and then be admitted to job training courses. At the end of the first semester of job training only one of the *WES* students dropped out. The typical dropout rate for those in job training is 50 percent.

Other Observations

The *WES* materials have great potential to orient adults to the realities of the workplace. But, for many adult students, the full potential of *WES* will not be realized without careful guidance and support from a teacher who can analyze a student's specific needs and provide training in areas where they are most deficient. Skills such as communicating effectively with customers require more extensive practice and corrective feedback than is possible simply viewing videos, reading text, and completing written assignments, whether they are in a workbook or on the Web.

WES is a workplace survey course. It can provide valuable insights about the realities a worker will face in the workplace. It can help a learner improve skills in some areas. But in most topic areas, six hours of study per unit is insufficient to improve certain workplace skills in which an adult is deficient. Remediation requires additional study and guidance from a skilled teacher.

Overall, *WES* was well received by teachers and students, though it may be ahead of its time. Many adult schools in the test sample were unsure where to position the course among their regular course offerings. Should they add it as a separate stand-alone course or add selected lessons to existing courses?

Computers, the Web and Adult Learners

In 1998 formative studies were done on early versions of the *WES* materials for adult learners and the *LitTeacher* online courses for adult educators. The studies led to useful correctives in the design of these products, but they also yielded broader lessons for the quite-new field of Web-based course design.[3]

The Web as a Textbook

The online component was considered the most appealing element of the *WES* courses. Teachers and students alike felt this medium contributed the most to student engagement and attainment of course goals. There was similar enthusiasm among educators for the *LitTeacher* professional development short course.

Despite their enthusiasm, many learners had difficulty with the Web medium. Unlike books, Web pages stand alone without the tactile and visual cues of what comes before and after. Each *WES* lesson is comprised of ten or more Web pages, some with links that take the learner to locations outside of the *WES* Web site. Most of these pages extend beyond a single screen, requiring a learner to scroll down to unseen portions of a page. In the pilot test learners frequently reported that they were not sure where they were within a lesson. In the revised design for the full series the developers placed markers on each page of the lesson with the intent of helping student maintain a sense of location. This undoubtedly helps, but it may not fully solve the problem. The same point could be made about the *LitTeacher* courses. Many educators were intimidated by the medium and reported at least moderate frustration trying to do the simplest of tasks in the new world of Internet computing.

Adults have spent decades mastering the conventions of print. For today's adults who grew up in a print world, an extended period of training and practice may be necessary before they can manipulate the Web with the same facility as a book. Future generations may be much more comfortable with the electronic medium.

Limits of the Web-Based Learning Tools

The formative studies provided interesting insights into the strengths and weaknesses of student tools commonly incorporated in Web courses. An essential feature of the LiteracyLink online materials—for both students and teachers—is the electronic portfolio. In response to questions or assignments a learner types responses into a text box. When the response is complete, the learner presses a button and the response is saved on the central server for later recall by the student or teacher. But each response is simply a collection of unformatted text blocks. The simplicity of this functionality is attractive for students new to Web-based learning. It also simplifies the task at the server end of things since only ASCII text blocks need to be supported, not the complex formatted files of a sophisticated

word processor. But it has pedagogical limitations. For many lessons (for example, preparing a resume for adult learners or developing a multi-page technology plan for adult educators) complex formatting is an integral part of the assignment. In a time when sophisticated word processors are commonplace, a barebones implementation of a portfolio limits the lessons that can be taught.

Another lesson from the *LitTeacher* evaluation is the limitation of the "chat" function for academic discourse compared with the more deliberative possibilities of an asynchronous threaded conference or newsgroup.   Both *LitTeacher* and *LitLearner* use streaming video clips as part of each lesson. In Web courses that are national in reach, built upon the existing Internet infrastructure and the quality of the end-user's computer and connection to the Internet, the delays in seeing the clip can be frustrating at best for the end user. Upon recognizing this problem the developers created a CD containing all of the video clips. They adjusted the Web lessons so that they could recognize if a CD was present in the user's computer and point to the CD instead of the servers in far away Virginia.

Technical Support

Another lesson from both the formative and summative evaluation is the ubiquitous need for technical support. It was required at almost every research site. At the present time few adult education sites are staffed to provide on-demand technical support. K-16 settings face similar challenges, but they are more likely to have the resources to provide satisfactory support.

In short, while the pedagogical design of the Web lessons is strong, at the turn of the 21st century there were weaknesses in the national and local infrastructure and in user's comfort with the Web as a medium for learning, that restrict the Web's potential. With time many of these limitations may be solved, increasing the value of the existing electronic products from the LiteracyLink Project without needing to make major adjustments to its design.

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[1] The three organizations were PBS, the National Center for Adult Literacy at the University of Pennsylvania, and Kentucky Educational Television.

[2] Johnston, J., Young, S.J., & Petty, L.I. (2001). National field test of Workplace Essential Skills. Ann Arbor: University of Michigan, Institute for Social Research. Available online at projectideal.org.

[3] The full formative report can be found at literacyonline.org/products/ncal/LLPilot.pdf.