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ABSTRACT
                Eight adult literacy programs in Ohio and two in
Minnesota were funded by the Ohio Literacy Resource Center in
coordination with the National Institute for Literacy to get
connected to and begin to use the Internet in the classroom. The
6-month grant (January-June 1996) supplied money, training, and
ongoing technical support. The 10 sites represented rural and
metropolitan-area programs. Some were large well-staffed programs;
others were medium to small programs with a core staff already pushed
to their limits. Three sites had Internet access; all others used
computers in the classroom. Hardware, software, and connection issues
were as follows: older buildings with substandard wiring for Internet
connectivity purposes; need to install phone lines in the classroom;
rural areas being the last geographical regions to acquire reliable
Internet connectivity; long distance charges paid by rural areas;
upgrading or purchasing computers; and installing and learning how to
use Internet software. Programs had different goals for using the
Internet in the classroom: increasing resources; using other tools of
the Internet; developing computer literacy for staff and students;
sharing program successes; and developing positive learning
experiences. An especially troublesome problem was the inability to
get online because of connectivity problems. All grant coordinators
desired continuing funding for online access. Some programs had
already made the commitment; others were seeking new funding.
Recommendations were developed for using the Internet in adult basic
literacy education (ABLE) classrooms. (An attachment lists
educational Internet sites for the ABLE classroom.) (YLB)

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Enhancing adult literacy in the State of Ohio

TECHNOLOGY UPDATE

Using the Internet in the Adult Basic Education Classroom: Learning Together Through Experience

by Margarete Epstein

Eight adult literacy programs across Ohio and two in Minnesota are actively learning the power of the Internet in the classroom. Individuals who once were too afraid to turn on a computer are now surfing the World Wide Web, experiencing the Pacific Ocean from an on-line connection, and having on-line discussions with people across Ohio and the world. What process did the students and staff go through to become proficient users of this new technology? The path for most was not without frustrations, but the end result was always the same. Their classroom experiences and, for some, even their lives would not be the same as before they began the journey to using the Internet.

How can a computer program be that powerful, to awaken students to self-initiated learning that years of schooling failed to instill? Using the Internet in the classroom does not mean just using a computer program. The Internet is actually a set of programs that links users to outside resources of various kinds. More powerful than the two dimensional book is the multimedia experience of the World Wide Web (WWW), more expedient than traditional postal service is

> *(W)e cannot operate a learning environment without the resources provided on the WWW. We now have many resources available to us that we didn't even realize existed. Every individual in the world needs access to the WWW.*
> [Staff Member]
>
> *I do think it is a helpful tool. Because you can learn so much in a short period of time and I felt that every school should have (it) starting from elementary and up.*
> [Student]

the use of E-mail and Keypals, and more flexible and comprehensive than most local community forums are the on-line newsgroups and listservs. All of these Internet tools and more create a rich, dynamic learning environment rarely experienced in the classroom. In this article you will learn how the staff and students of these ten programs met the challenges of getting connected to the Internet and learned how to use the powerful tools of the Internet in creative and rewarding ways.

These program projects were funded by the Ohio Literacy Resource Center (OLRC) in coordination with the National Institute for Literacy (NIFL), which enabled them to get connected and begin to use the Internet in the classroom. The six-month grant period that ran from January to June of 1996 supplied money, training, and on-going technical support. Some programs already had Internet access, but most did not. This overview will explain the types of programs in the project; practical hardware, software and connection issues; project goals and project outcomes; challenges to achieving these goals; and the future of the Internet in these programs.

Program Characteristics

Characteristics of the ten sites varied dramatically:

- Both rural and metropolitan-area programs were represented.
- Some were large well-staffed programs, others were medium to small programs with a core staff that were already pushed to their limits.

- Some had fairly homogenous student populations in which Internet access meant extending horizons by "experiencing" new cultures, concepts and people via the Internet.
- Other programs had much student variety so the Internet resources strengthened and supported that diversity.

> *The availability of the World Wide Web for our staff, administrator, and students will open the world to an area that doesn't have the benefit of museums, art galleries, and the availability of other cultural and informational resources.*
> [Project Administrator of a small rural program]

Nut and Bolts of Getting Connected

Three sites had Internet access when awarded the grants, and all the others used computers in the classroom but had to face the hardware/software challenge of getting connected to the Internet. Program locations often determined the quality and accessibility of an Internet connection. These are some hardware, software and connection issues that the program participants faced and that you may want to keep in mind as you begin the process of getting an Internet connection.

- Older buildings often have substandard wiring for Internet connectivity purposes and may need new wiring.
- Phone lines often have to be installed in the classroom.
- Rural areas are the last geographical regions to acquire reliable Internet connectivity (Internet providers often don't see a large enough market there).
- Rural areas often have to pay long distance charges in addition to the monthly charge (This is changing all the time).
- Older computer equipment may not be fast and powerful enough for an Internet connection.
- Modems, ethernet cards (if networked) and memory chips have to be added to an older computer.
- Purchasing new computers or newer model computers may be a less expensive alternative to upgrading an older computer.
- Installing and learning how to use Internet software such as the World Wide Web browser and E-mail programs was another consideration.

> *Installing a phone line and getting the necessary hardware and software ready to allow us to get on-line were major barriers....The existing phone line is a Centrex phone system and we needed a POTS (plain old telephone service)*
> [Project Administrator]

Setting Goals and Accomplishing Them

As part of the grant funding each of these program participants had clear goals for using the Internet in the classroom. Examining these goals and the results may give you some ideas on setting goals of your own.

Increasing resources for the classroom.

- Accessing the resources and information found in various World Wide Web (WWW) sites and having the students read and share their impressions of these sites.
- Creating detailed lesson plans to access WWW sites and guiding students through learning about and exploring the WWW.
- Getting staff to find and evaluate appropriate WWW sites that could then be distributed to colleagues.
- Using the Internet resources for specific life skill needs, such as parenting and health care issues, finding information about careers, or searching for jobs.

Using other tools of the Internet like E-mail, Listservs, and Usegroups.

- Using "Keypals," (E-mail penpals), students were matched with other students to use E-mail for ongoing correspondence, thus emphasizing this tool as a way for students to build communication and literacy skills.
- Emphasizing E-mail as a way for teachers and administrators to build a collegial foundation (especially valuable for those individuals who have little access to others in the literacy community).
- Using Listservs and Usenet groups as a means to fulfill the need of greater cohesion among colleagues in the field of Adult Basic Education.
- Using chat forums (real time, text-based conversations with others on the Internet) to enhance communication and literacy skills.

Developing computer literacy for staff and students.

- Increasing students' computer proficiency in general (computer competency is highly valued in the workplace and a stumbling block for many adults competing for good jobs in the workforce).
- Increasing cooperative and collaborative learning about both the content area under investigation and the technical aspects of using the computer and the Internet software by having students work in pairs at the computer (this was a necessity most of the time).
- Improving program staff computer proficiency in general and proficiency in using the Internet as a learning tool (usually as a trial by fire experience!).

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Sharing program successes.

▶ Creating a homepage on the WWW in order for the community to find out about their specific program.
▶ Disseminating project findings to the literacy community through various conferences and the local press.

Developing positive learning experiences in the classroom.

▶ Increasing student motivation for learning, decreasing absenteeism, and increasing student-generated class-room learning.
▶ Increasing teacher/student collaborative efforts.
▶ Modeling life-long learning for students (teachers learned side by side with the students).

> *I was able to find out information on just about everything and everyone I wanted to. I even wrote to Richard Bey, and I also had a Key Pal from Walsh College...It's a fun and very easy way of learning.* [Student project evaluation response]

Not Without Challenges!

Most of the programs experienced at least minor unforeseen difficulties during the project grant period, but no problem prevented project success. Especially troublesome was the inability to get online because of connectivity problems. These are some other problems that project administrators, teachers, and students experienced.

▶ Unexpected lack of necessary hardware, connection delays and interruptions, and sometimes steep learning curves regarding using the new technology.
▶ Delays at the administrative level caused one program to wait for Internet connection.
▶ Lack of on-site technical expertise to troubleshoot hardware/software and connection problems.
▶ Problems with connections "dropping" (the phone connection suddenly is lost necessitating re-dialing and getting back on-line).
▶ Getting staff and students comfortable using the computer.
▶ Once comfortable, limiting the time! Students loved using the WWW and were often frustrated by the time limitations imposed to allow everyone time to access the Web.
▶ Time issues were heightened by slow-loading graphics. Accessing a site on the WWW may take a minute or two out of the precious twenty minutes allotted the student.
▶ Accessing "inappropriate" sites that featured content that may have been viewed as offensive by some staff or students.

▶ Finding sites with appropriate reading level materials for adult learners.

> *We have learned patience with the ups and downs of using the Internet...One teacher built a lesson plan around an Internet site only to find that the site disappeared in a week!*
> [Project Administrator]

The Future of the Internet in These Programs

Considering the success of the grant projects, how will these programs incorporate the Internet into their ABE programs in the future? All of the grant coordinators desired continued funding for on-line access based on the incredible resource potential alone. Some programs have already made this commitment by allocating existing funding for this purpose. Others are seeking new funding sources; one program created an alliance with a local Internet provider who will fund its service for one year. These are some of the ways in which the potential of the Internet will continued to be developed with students and staff.

▶ Expanding current WWW site resources for lesson plans.
▶ Increasing technical knowledge through the creation of homepages and web sites by students and staff.
▶ Building on the computer proficiency of teachers, staff and students by using Internet tools.
▶ Developing "appropriate use" contracts for students and staff to deal with the issues of accessing questionable materials.

> *We anticipate tremendous growth in our use of the Internet in this next year. Specifically, we anticipate that we will identify a better tie-in with our curriculum, more opportunities for students to use the Internet, and an increased knowledge of good resources on the Net.* [Project Administrator]

The issue of education here is not to be underplayed. Although these teachers and students really enjoyed their excursions on the Internet, much was learned. Literacy, communication, and computer skills were being honed every time the Internet was accessed. Skills were doubly enhanced by discussions in the classroom and by the creation of projects based on Internet experiences, such as writing a newsletter for the literacy community or creating postcards about the places the students "visited" on the Internet.

As our society is changed by these new technologies, it is vitally important that all individuals have access to and experience with the Internet. This point is not lost on

teachers and students in these programs. This project did more than initiate individuals into the "mystery" of the Internet; it transformed many if not all participants into staunch supporters of the Internet and its role in the classroom.

> *We have made the Internet a priority item in our FY97 Even Start budget...We will work to spread the news about this wonderful resource.*
> [Staff Member]

This project shows the importance of helping ABLE classrooms get online to use the Internet and its powerful resources. Collaborations among national, state and local programs are helping students to learn. Through this effort many individuals have discovered the Internet and will continue to use it as an exciting tool in the classroom. It is through sharing these experiences with other programs that everyone can learn together how to use the best from the Internet and how to deal with the inevitable problems of integrating new technologies into the classroom.

How do I get started?

If you are interested in using the Internet in your classroom there are many issues to consider. Advanced planning will go a long way in helping to incorporate these new learning tools in your program with minimal headaches.

First, think about the ways in which you and your staff may want to use the Internet and decide on goals. These goals can be generated from what you identify as program needs. Some goals may be:

- Staff development
- Resources for the classroom
- Literacy and communications building tool for students
- Computer literacy for staff and students
- On-line curriculum development

Identification of program goals and needs is important when going to the next step of identifying your hardware and software needs. If you already have equipment, do a complete inventory. This includes:

- Is there appropriate wiring available for a connection? (Call your local telephone company and have them come out to give you feedback on what you have and what you will need for an on-line connection).
- Identify type of computer(s) and processor speed (e.g., IBM 486 33mhz).
- Check the amount of RAM in each computer.
- Does the computer have a modem?

- Are your computers networked? Do you want them to be?
- List any ancillary equipment such as printers.

If you are completely lost about what you have and what you need don't despair at this point. This may seem like a lot of work, but you are not without resources. Some of these resources are as follows:

- The program participants from this grant.
- Technology support at the Ohio Literacy Resource Center (1-800-645-7823 or 330-672-7823).
- Local university/college departments such as computer science, library science and education, that have proficient computer technology assistants. (Any contacts you may already have or would be willing to develop can be valuable. Perhaps a college student could be encouraged to provide assistance to your program as part of a course requirement or as an Independent Study).
- Users' groups in your area often have individuals willing to provide answers to questions and may be persuaded to assist on-site.
- Anyone in your program who already has E-mail at home or at work can get on-line help through listservs. (The OLRC operates Technet, which is devoted to computer technology issues and is limited to Midwest literacy professionals).
- Magazines and journals about computer technology can provide detailed comparisons of equipment.

Using a variety of resources and gathering lots of information to develop an understanding of the technology and your needs will give you the start necessary to create a technology plan, budget and perhaps, if need be, to approach potential funding contacts. If this is one of your program goals you will greatly benefit by taking the time to investigate your options and needs. Good luck in your Internet quest;, it will be successful as long as you persevere as these program participants have amply demonstrated.

**THE OHIO LITERACY RESOURCE CENTER
IS LOCATED AT
KENT STATE UNIVERSITY
414 WHITE HALL, PO BOX 5190,
KENT, OH 44242-0001
1-800-765-2897 OR 330-672-2007 EMAIL
ADDRESS: OLRC@ARCHON.EDUC.KENT.EDU**

EDUCATIONAL INTERNET SITES FOR THE ABLE CLASSROOM

The following URLs were selected by adult literacy instructors across Ohio and Minnesota because they felt the sites were excellent educational and/or informational tools. As of December 1996 these sites were available on the World Wide Web. If you find any errors in the URLs, or if you would like to add some sites to our list, please contact the Ohio Literacy Resource Center at 1-800-765-2897. You may also e-mail us at:

OLRC@ARCHON.EDUC.KENT.EDU

Math

K-12 Teachers' Place-The following sites are a collection of great math ideas and exercises for students as well as teachers.
> http://forum.swarthmore.edu/teachers/k12.teachers.html

> "Magic Squares"-http://forum.swarthmore.edu/alejandre/magic.square.html
> "Suzanne's Math Lessons"-http://forum.swarthmore.edu/alejandre/index.html
> "Math Forum Teachers' Place"-http://forum.swarthmore.edu/teachers/index.html
> "Adult Numeracy: Resources for Teachers"-
> http://forum.swarthmore.edu/teachers/adult.ed/
> "Math Forum Student Center"-http://forum.swarthmore.edu/students/
> "Ask Dr. Math"-http://forum.swarthmore.edu/dr.math/dr-math.html

Busy Teacher's WebSite-Math lesson plans and various classroom activities for teachers.
> http://www.ceismc.gatech.edu/BusyT

Math: Teaching Ideas and Tips-Teachers send in favorite lesson plans to share with with other educators.
> http://www.pacificnet.net/~mandel/Math.html

Mathline on PBS-This is part of the PBS Homepage
> http://www.pbs.org/mathline/

PBS Teacher Connex-A guide to science and math programs on PBS and it has links to other science and math web sites
> http://www.pbs.org/tconnex/

Eisenhower National Clearinghouse-This web site contains different programs and resource areas for a variety of math subjects and topics for all ages.
> http://www.enc.org/lesmath.htm

Explorer Home Page-This site contains math folders and a Mathematics outline which lists sources in Math on the internet.
> http://explorer.scrtec.org/explorer/

Alliance for Math--This site contains articles, lesson plans, a variety of learner oriented exercises, and an exhaustive number of topics to explore.
> http://hub.terc.edu

Science

Galileo Mission to Jupiter–This site can be a bit technical, but is still a good resource.
   http://www.jpl.nasa.gov/galileo

Jet Propulsion Laboratory–This site contains several activities and lesson plans for students and teachers.
   http://www.jpl.nasa.gov/

The Nine Planets–A very interesting web site. It takes you on a multi media tour of the solar system.
   http://seds.lpl.arizona.edu/nineplanets/nineplanets/nineplanets.html

Welcome to the Planets–NASA/JPL/Planetary Data System–This site takes a while to load, but it is worth the wait. Numerous pictures and information about the planets, smaller bodies in space, and space exploration vehicles.
   http://pds.jpl.nasa.gov/planets

Understanding Our Planet Through Chemistry–Easy to read, the text and photos make this a helpful site.
   http://helios.cr.vsgs.gov/gips/aii-home.htm

Science in the Rainforest– Excellent site. It has easy to read information, pictures, maps, trivia questions, and related links are included.
   http://www.pbs.org/tal/costa_rica/index.html

Everest Quest: Through the Icefall–This site includes the scientific background, history, and culture of this area of Asia. Plus, maps are available as well as e-mail addresses of some of the climbers of Everest.
   http://www2.pbs.org/wgbh/pages/nova/everest/

The Discovery Channel on Line–This is a good place for learners to explore a wide variety of topics that have appeared on the Discovery Channel. Very accessible.
   http://www.discovery.com

Heart Preview–This site contains everything you always wanted to know about the heart and ailments of the heart.
   http://sln2.fi.edu/biosci/preview/heartpreview.html

Discover Magazine–This site offers an Archive Library with classic magazine articles that would be of interest to students.
   http://www.enews.com/magazines/discover

NASA K-12 Internet Initiative–An excellent place to begin your exploration of sites by subject area.
   http://quest.arc.nasa.gov/

Social Studies

In Search of the Oregon Trail–An excellent PBS site. Contains facts, a teacher's guide, and trivia questions.
> http://www.pbs.org/oregontrail/index.html

The White House–This is a fun and easy way to learn about the White House.
> http://www.whitehouse.gov/WH/welcome.html

CapWeb–A guide to the U.S. Congress–This site gives access to the Senate, House of Representatives, Library of Congress, and related information.
> http://www.capweb.net.

Social Studies Sources–A great place to do internet research by using several different social studies resources.
> http://www.halcyon.com/howlevin/social.studies.html

National Civil War Association–This site lists resources on the internet concerning the Civil War.
> http://ncwa.org.

Vote Smart Web–This site contains information about all the candidates running for office and their views on more than a dozen important issues. An excellent resource for voters.
> http://www.vote-smart.org./

Politics Now–This is an internet news page about political topics. Very interesting and informative for students and teachers.
> http://politicsusa.com

Reading and Writing

The Purdue University On-Line/Writing Lab–This site offers information on just about any topic concerning English and writing skills.
> http://owl.trc.purdue.edu/

On Line English/Grammar–This site has information and some exercises on just about any part of the English language that can be imagined. Very good resource for grammar questions.
> http://www.edunet.com/english/grammar/index.html

Life Skills

America's Job Bank–Students can search for jobs that are available anywhere in the U.S.
> http://www.ajb.dni.us/

Interactive Employment Network–This site offers information on interviewing, including tips, an interview research checklist, personality assessments, interviewing strategies, and an interview question quiz.
> http://www.espan.com/docs/intprac.html

English as a Second Language

Teaching English as a Second Language Journal—This is a monthly web magazine with resources for teachers and learners.
> http://www.aitech.ac.jp/~iteslj/

English as a Second Language—This site contains access to other popular sites, to some ESL games, and grammar information.
> http://www.aitech.ac.jp/~iteslj/Links/Students.html

ESL Gopher—This site contains an extensive list of ESL articles for teachers.
> http://gopher://ericir.syr.edu:70/11/Clearinghouses/Adjuncts/ACLE/Digests

Miscellaneous Web Sites

U.S. News and World Report—This is an Internet journal of the popular news magazine.
> http://www.usnews.com

CNN— This site contains information about the Cable News Network.
> http://www.cnn.com

NBC—This site contains programming and viewing information about the National Broadcasting Company.
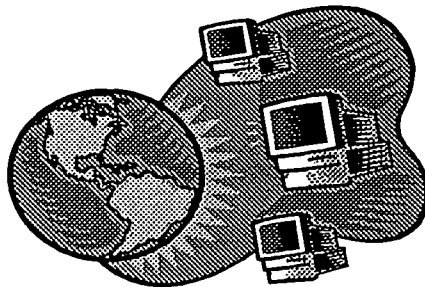> http://Www.nbc.com

CBS—This site contains information about the popular television network.
> http://www.cbs.com

Pioneer Press—This is the Internet version of the daily newspaper *Pioneer Press* from the Twin Cities—Minneapolis-St. Paul, Minnesota.
> http://www.pioneerplanet.com.

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1-800-765-2897 OR 330-672-2007 EMAIL ADDRESS: OLRC@ARCHON.EDUC.KENT.EDU

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