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ABSTRACT

Designed to help literacy providers establish a plan for the use of technology within their organization, this practical guide and workbook consists of hands-on worksheets. It offers points to reflect on and consider when assistance is needed to create a technology plan within an adult literacy setting. The workbook focuses on computer-based technologies but includes in the appendix applications of other multimedia systems and technologies for literacy. The guide consists of seven steps that can be used to establish a technology plan in an adult literacy setting. Following each section, worksheets are included for the administrator to evaluate the information presented. The seven sections cover these steps: (1) a vision of technology; (2) environmental scan; (3) evaluation of technologies (software and hardware); (4) budget; (5) staff development; (6) timeline and implementation; and (7) an ongoing evaluation. Appendixes include listing and applications of other multimedia systems and technologies for literacy; a comparison of integrated learning systems and curricular systems; sample plan for the use of technology within an organization; and 16 references. (YLB)

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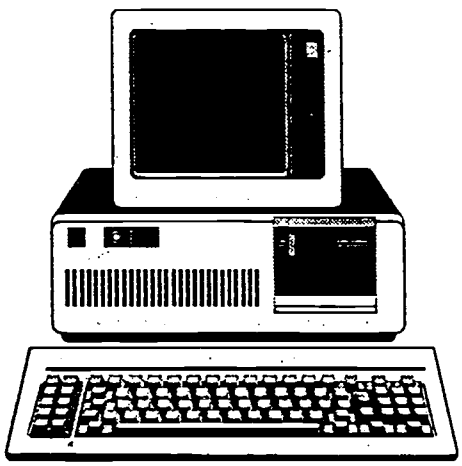
Creating a Technology Plan



A Step-by-Step Guide and Workbook for Adult Literacy Providers

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CREATING A TECHNOLOGY PLAN

A STEP BY STEP GUIDE AND WORKBOOK FOR ADULT LITERACY PROVIDERS

By

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INTRODUCTION

This practical guide and workbook consisting of "hands-on" worksheets has been designed to help literacy providers establish a plan for the use of technology within their organization. It will offer points to reflect on and to consider when assistance is needed in creating a technology plan within an adult literacy setting.

The components of technology not only include computer based technologies, but tele-communication technologies (i.e., television, VCR, fax, etc.) and consumer electronic devices (i.e., calculators, hand-held dictionaries, etc.) as well. This workbook will focus on computer-based technologies, but included in the Appendix will be listings and applications of other multi-media systems and technologies for literacy. (See Appendix A.)

This guide consists of seven steps that can be used to establish a technology plan in an adult literacy setting. Following each of the sections, worksheets will be included for the administrator to evaluate the information presented. The seven sections include a vision of technology, environmental scan, technology evaluation of hardware and software, budget, staff development, time line and implementation, and an on-going evaluation. By using these steps, adult literacy providers will be enabled to create a technology plan within their organization.

Many organizations may feel that monies are not available for any kind of technology within their classrooms. By using sources that can donate both hardware and software, a persistent administrator can be very successful in establishing a technology program. Don't be discouraged; this is not an insurmountable task. This seven-step plan hopefully will encourage you to pursue the establishment of a technology plan. (See Appendix B for case study of a successful program with extremely limited resources.)

STEP 1. VISION

The first step in creating a technology plan is to develop a vision for technology use within your organization. Computer-based technologies are currently used in literacy programs for management and record keeping, instructional support, direct instruction, and assessment and testing of learners. This section is designed to help administrators focus on the benefits and advantages of using technology with students for instruction and assessment.

According to research on this topic, the benefits of using technology with the adult learner are:

immediate feedback - enable students to see immediate results of their work
total interaction of the learner in the instructional process
provides variety in instructional methods
provides individualized instruction
instruction is learner directed
readiness levels and learning styles are considered
material is presented in a visual format
responsibility for learning is placed squarely on the shoulders of the student
provides privacy
provides potential for development of keyboarding skills for further employment
provides high incentive to learn
provides flexibility of student access to instruction
is self-paced learners use time more efficiently
students are tested only when they demonstrate mastery
sustains motivation because of immediate feedback
instant replay of material presented is possible
encourages team learning if students work in pairs at the computer
constant and consistent availability of material presented

The benefits of using technology for the instructor/administrator are:

creates greater student record keeping and data
compliments the state policy of open entry, open exit
provides multi-level instruction within a classroom
conducive to late class arrivals or students who must leave early
enables teachers to devote more individual time to student and increases personal interaction between student and teacher.

After reading the benefits and advantages of using technology in an adult literacy program, reflect on your program's current use of technology and your vision for technology. Examine your personal thoughts and ideas of technology and think about your vision for the future.

CURRENT USE OF TECHNOLOGY WORKSHEET

This worksheet is designed to help you reflect on your program's use of technology in adult literacy instruction. Please use the set of questions to examine a specific use of technology that you have found to be particularly effective for instruction with adult learners.

Do not limit your thinking to computers and software, but consider also videotapes, cassette recorders, and hand-held language devices. Although you may use one or many of these technologies for instruction, choose only one for each worksheet you complete.

1. Identify the specific technology and the type of students who are using it for instruction.

2. Briefly describe how the technology is being used in instructional activities. Include a discussion on how students use the technology and how the technology is used within the curriculum.

3. Describe the benefits of using this technology with students.

4. Describe the role of the instructor or tutor during instruction with the technology. Has the instructor or tutor role changed because of the technology? How do students, teachers and technology interact with each other?

5. Describe the obstacles you, your staff, and/or students have experienced in using this technology.

6. Describe the steps taken to implement the effective use of the technology with students and staff. (National Center on Adult Literacy, 1994.)

VISION OF TECHNOLOGY WORKSHEET

For a few moments, don't allow yourself to be restricted by the realities of funding, facilities, or other potential impediments to the acquisition and use of technology in your program. Instead, think about what you would like technology to help you accomplish. First, answer these questions individually, then share and discuss your answers with a small group of colleagues.

1. What aspects of teaching or learning in your organization are, of necessity, somewhat repetitive or require extensive teacher attention and intervention?

2. What use of technology can you imagine would make this teaching or learning more efficient?

3. What areas of your curriculum are limited by the difficulty of illustrating concepts, activities, events, etc.?

4. What use of technology can you imagine would make this part of the curriculum more effective?

5. What innovative technologies have you heard about that seem as though they might have some potential for use in your program?

6. Which of the ideas you identified seem to have the greatest potential for improving your program? What would be the next step to acquiring that technology?

7. What is your vision or portrait of the future regarding technology within your organization? Write your vision. (Georgia Literacy Resource Center.)

STEP II. ENVIRONMENTAL SCAN

Once a literacy organization has developed a vision for technology use, an environmental scan must be conducted. It is important to review the organization's strengths, weaknesses, available resources, and use of technology both within and outside the department.

The most important and extensive part of the environmental scan must be internal. Internal factors such as the infrastructure of the organization, financial and budget concerns, and staff needs must be considered.

The external scan goes outside the department and explores what existing resources are available in your local organization, the community, state or region. Other programs that use technology can be contacted, visited, and tapped into for advice. Books and articles on using technology for adult literacy are also readily available.

To conduct an internal and external environmental scan, reflect and think about the items on the following worksheets.

INTERNAL SCAN WORKSHEET

1. Think about the infrastructure of your organization and how it will assist you in implementing technology, (i.e., physical plant, location, time constraints.) If your organization has more than one site, consider each one separately.

2. What are your program's internal strengths and weaknesses in using technology?

3. How do you presently use technology?

4. How will this present use assist you in achieving your vision?

5. Take an inventory and identify what technology is currently available and how it is being used.

6. What is the administration's attitude regarding the importance of technology?

7. Are there existing technology programs that could be implemented before designing a completely new one?

8. What are your financial resources? (See Budget Section for details.)

9. How can these financial resources be used for implementing technology?

10. Which staff members have technology skills and expertise in planning and implementation?

11. How can these staff members be utilized to implement technology?

12. Do you have internal technical support or must you go outside your organization?

EXTERNAL SCAN WORKSHEET

1. Who in the community, state, or region can assist in the implementation of technology by providing advice, technological support, software reviews, and training?

2. What literacy organizations can give assistance for support of technology?

   Schools or universities
   NCAL or other national literacy organizations
   State literacy resources
   Local businesses

3. What vendors can supply names of satisfied customers?

4. What local or state programs can you visit to observe existing technology programs?

5. What books, articles or journals are available on technology for adult literacy?

STEP III. EVALUATION OF TECHNOLOGIES

After an environmental scan has been conducted, specific technologies including both hardware and software must be evaluated. Since the purchase of hardware and software is usually a large expense, it is important to plan and make an informed and wise selection.

One important point to consider is that computer technology does change about every six months in the areas of price, new software and hardware developments, and company mergers and closings. You might want to consider some of the emerging technologies that have built-in adaptability for future add-on options. (Turner, 1993.)

Software selection should precede the hardware acquisition when possible. (Hopey, Morgan, 1995.) Software must meet the objectives of the department and most importantly meet the needs of the leamer. Selection of software can be made on an individual basis or purchased as an integrated learning system (ILS.) An ILS is a comprehensive instructional package that employs technology to offer a basic skills curriculum and management system for students, (i.e., Jostens, Pals.) Individual software programs can be located through vendor demonstrations, educational conferences, colleagues, other literacy programs, and software reviews in education magazines.

Hardware selection and evaluation should be based on the type needed to operate the particular software applications. Take inventory and evaluate the hardware that your organization already has. Try to project its remaining useful life and its ability to operate new software. Selection of hardware may also take place at vendor demonstrations, educational conferences, or other sites where computers are already in use. Selection of hardware will also need to focus on the available monies, which will be a major factor.

On the following pages are several worksheets that will help you with your hardware and software selections.

SOFTWARE EVALUATION WORKSHEET

1. Would your department benefit more from an integrated learning system or from individual software packages? (See Appendix for comparison of Integrated Learning Systems and Curricular Systems.)

2. Where can you get information about software and technical developments for adult literacy programs?

   Vendor demonstrations
   Reviews in software magazines
   Educational conferences
   Other literacy departments
   Computer user groups
   Personal contacts

3. What type of software do you need for each type of student?

   Levels: *ABE*
   GED
   ESL
   Life Skills

   Programs: *Workplace*
   Correctional
   Family Literacy

4. Do you need software for:

   Drill and practice
   Word processing, databases, spreadsheets, graphics, etc.
   Tutorials - teach new skills
   Educational games
   Problem solving
   Simulations - interactive learning
   Digital speech

5. How will you select your software? Do you have criteria or standards you will employ?

   On the following page is a software evaluation guide to help you.

SOFTWARE EVALUATION GUIDE

Use these sheets to choose and evaluate a piece of software for your programs. After reviewing the software, please respond to the following items by circling the response you feel is most accurate. Please write in any additional comments in the space provided. The source of this evaluation is the National Center on Adult Literacy, 1994.

Software:_____
Publisher:_____

I. **Learner/Computer Interaction**

		Agree	Disagree	Not Applicable
1.	Exercises are appropriate.	Yes	No	N/A
2.	Exercise frequency is adequate.	Yes	No	N/A
3.	Directions and instructions are clear.	Yes	No	N/A
4.	Type and place of requested response is clear.	Yes	No	N/A
5.	Feedback after response is helpful.	Yes	No	N/A
6.	Final evaluation of learner's performance is provided.	Yes	No	N/A
7.	Software is easy to operate.	Yes	No	N/A
8.	Software is adaptable to special needs students.	Yes	No	N/A

Additional Comments:

II. **Learner Control**

1.	Options, menus, and choices are available.	Yes	No	N/A
2.	Display time is under learner's control.	Yes	No	N/A
3.	Mouse exercise directions are adequate.	Yes	No	N/A
4.	Movement within software is easy.	Yes	No	N/A
5.	Graceful exits are available at all times.	Yes	No	N/A

Additional Comments:

III. **Sequencing of Instructional Needs**

		Agree	Disagree	Not Applicable
1.	Goals and objectives were specified explicitly.	Yes	No	N/A
2.	Instruction is organized from general to specific.	Yes	No	N/A
3.	Adequate exercises and examples are provided to explain concepts.	Yes	No	N/A
4.	Major concepts are easily identified through visual cues.	Yes	No	N/A
5.	Different opportunities are provided for different ability levels.	Yes	No	N/A

Additional Comments:

IV. **Screen Design**

1.	Screen layout is pleasing.	Yes	No	N/A
2.	Instructions are provided in areas separate from text.	Yes	No	N/A
3.	Color is used effectively.	Yes	No	N/A
4.	Exercises with the mouse require dexterity appropriate to student's ability.	Yes	No	N/A

Additional Comments:

V. **Multimedia Features**

		Agree	Disagree	Not Applicable
1.	Digital audio is available.	Yes	No	N/A
2.	Audio is used appropriately given the reading level of the student.	Yes	No	N/A
3.	Appropriate graphics, photos, or video enhance the instruction.	Yes	No	N/A
4.	Student progress is not slowed by unnecessary multimedia effects.	Yes	No	N/A
5.	Student can choose to access audio and visuals on an as-needed basis.	Yes	No	N/A

Additional Comments:

VI. **Readability**

1.	Screens contain an amount of text appropriate to the students' reading ability.	Yes	No	N/A
2.	Content is relevant to adults.	Yes	No	N/A
3.	Reading level is appropriate for adults functioning on all levels.	Yes	No	N/A
4.	Software teaches important reading comprehension skills.	Yes	No	N/A

Additional Comments:

VII. **Administration**

1.	Accessing the course on the computer is easy.	Yes	No	N/A
2.	Procedures for enrolling new students are clear.	Yes	No	N/A
3.	Student progress is easily tracked.	Yes	No	N/A

Additional Comments:

HARDWARE EVALUATION WORKSHEET

1. What hardware do you presently have available in your department?

How many computers do you have?
What brand are the computers?
Will they adapt to the software you have chosen?
How reliable is your present hardware?
Have you had many breakdowns?
What are the causes of your breakdowns?
Do you have a service contract or vendor support?

2. Where can you get information about available hardware suitable for adult literacy programs?

What technical experts are available to advise and answer questions about the inner workings of computers?
Can you get help from vendors, computer user groups, educational conferences, or other literacy departments?

3. What type of hardware do you need to run the software you have selected?

What do you need in the form of essential hardware?

Computer and keyboard
Disk drive - two (2) are preferable
Monitor
Printer - must have for word processing or record keeping

What do you need in the form of optional hardware?

Mouse
Modem
Sound Systems
Cassette connect device (CCD)
Other special features

4. What are the requirements for RAM memory?

5. How many disk drives or how much hard disk space is required?

6. Does the computer have up-grade ability? Can the computer system add-on options in the future?

STEP IV. BUDGET

After the vision has been established, the environmental scan has been completed and the hardware and software has been evaluated, a budget has to be developed.

In determining a budget, the following areas of concern need to be addressed:

1. *Potential sources of money.*
2. *Existing monies within the organization.*
3. *Cost of hardware and software.*
4. *Staff development needs.*
5. *Location of the computer center and its physical needs.*
6. *Cost of on-going maintenance.*
7. *Miscellaneous costs.*

The following breakdown provides a useful guide for allocation or resources:

Item	Percent of Budget
Software	20
Hardware	60
Staff Development	10
Maintenance	5
Miscellaneous	5 (Hopey, Morgan, 1995)

Consider the items on the following worksheet to help you conceptualize a budget for your technology plan.

BUDGET WORKSHEET

1. Which of the following sources of funding do you consider a potential resource for monies for your technology plan?

   a. *Federal*
   b. *State*
   c. *Local*
   d. *Foundations*
   e. *Business and industry*
   f. *Professional organizations*
   g. *Participants in the program*
   h. *Unions*
   i. *Fund raising*

2. Are you aware of any organizations that could be potential donors of hardware or software for your technology plan? Some sources for consideration might be:

   Companies who are upgrading computer systems
   Private individuals
   Colleges who are upgrading
   Other sources of old and outdated computers
   Software that may be copied or borrowed

3. How much money does your organization have available or could possibly reallocate to this project? Could money from other grants possibly be reallocated to this project?

4. In considering different hardware and software, determine the costs of

   a. *Hardware package*
   b. *Software package*
   c. *Number of workstations you need to establish*
   d. *Cost per workstation*

5. What will your staff development needs be?

How trained is your staff already?
Are they computer literate or will you have to conduct costly in-service?
Does the vendor provide training as part of the sale?
Does the vendor offer on-going support?

6. Where will the technology be located?

Will there be more than one site?
Will special wiring be required? (Cable, electrical)
Will there be labor charges for set-up of equipment?
Will any remodeling or security measures have to be completed?

7. After computers are installed, consider the following:

   a. *Who will repair the computers?*
   b. *Does a maintenance agreement exist for initial installation and continued maintenance from the hardware provider?*
   c. *Do you have access to computer repair within your organization?*

8. What other supplies and materials will be needed and what will their initial and on-going costs be?

   a. *Furniture (bookshelves, blackboards, desks and tables)*
   b. *Storage of old and new equipment*
   c. *Projectors and other equipment and materials* (Hopey, Morgan, 1995)

STEP V. STAFF DEVELOPMENT

The next area of consideration in creating a technology plan is determining your staff development needs.

> *"Comprehensive training is essential for two reasons. First, proper training will allow staff to make informed decisions regarding software selection and technology integration. Second, only well-trained, confident staff members can effectively train and support other staff members and use technology effectively with students." (Hopey, Morgan, 1995).*

The basic guidelines for building an effective technology staff development program are:

> *Basic technology training should be provided in a sequence that gradually increases in complexity and is sufficiently flexible to allow trainees to begin at their own level of ability and progress at their own rate.*
>
> *Training should be designed to allow instructors the opportunity to practice new skills in the course of their regular training.*
>
> *Training should take place during the work day, make use of actual situations involving students, and provide incentives that motivate staff to participate actively.*
>
> *Whenever possible, staff members within the organization should be used as instructors for the training.*
>
> *Training should encourage staff to support each other in their use of technology. (Hopey, Morgan, 1995).*

On the following page is a worksheet to help you determine your staff development needs when you initiate a technology plan in your department.

STAFF DEVELOPMENT WORKSHEET

After focusing on the needs of staff development, the following items should be considered:

1. Who will be using the technology?

2. Does the staff already have knowledge of the technology? If not, who should be trained?

   What is the technical background of your staff?
   Who will be choosing the instructional hardware and software?
   Does your staff understand the hardware and software limitations and uses?
   Is your staff well-trained in the areas of maintenance, management and resolution of technical problems?

3. Who will provide the training? Will a staff person, vendor or independent consultant provide the training? What is the technological expertise of the trainer?

4. What will be the format of the training?

   Will the training be adequate?
   Will the training be more than is necessary?
   Will the training be a crash course?
   Will training provide an on-going support system?
   Will training be individualized or in the form of a workshop?

5. What is the cost of the training?

   Is it an additional expense or is it included in the purchasing price of the hardware and software?

STEP VI. IMPLEMENTATION

At this point in the process, the objectives and goals of the technology plan have been determined, the hardware and software have been evaluated, a budget has been considered and staff development needs have been determined. Step Six - Implementation - now has to be considered. Good planning will provide a roadmap for the implementation of technology. It is also important that a time line be established to help with the implementation phase. The question to be asked now is "How will all the pieces fall into place?" How will all of the pre-planning stages now be coordinated and executed into a smooth running operation? (Hopey, Morgan, 1995.)

There are three areas of concern for successful implementation.

1. *The establishment of a technical support system.*
2. *On-going instructor training.*
3. *Development of a system for monitoring the operation of the lab.*

Availability of technical support is a very important factor to consider when implementing a technology plan. The different options of support could be:

a. *A full-time staff member.*
b. *A part-time staff member.*
c. *An outside consultant.*
d. *A full-time technology specialist*
e. *A volunteer*
f. *A part-time technology specialist.*

Consider the following questions on the next page to determine how you would implement your technology plan.

IMPLEMENTATION WORKSHEET

1. Who will be responsible for the operation of the system?

   If this person is not a technology expert, will support personnel be available?
   Who will maintain the system?
   Will the support service be on-going?

2. How will the lab be scheduled and used? Who will make these decisions?

3. What rules and policies will be required for the smooth operation of the lab?

4. How will students be oriented on the computers?

5. Who will provide on-going instructor training?

6. What happens if there are hardware or software problems? Who will be responsible for repairs? Who will the contact person be if there is a problem? (Loflin, 1995.)

TIME LINE WORKSHEET

Task Assignment (i.e., Develop a Vision)	Date Initiated (i.e., February 1995)	Person Responsible (i.e., Director)	Date Completed (i.e., March 1995)

STEP VII. ON-GOING EVALUATION

Evaluation of the technology plan is the seventh and final step in the creation of a technology program.

Evaluation of the program needs to be on-going and continuous for several reasons. An on-going evaluation encourages planners to focus on objectives and whether or not they are being met. If they are not being met, new priorities and objectives need to be established. Continuous evaluation will help detect strengths and weaknesses within the organization. An on-going evaluation will result in further improvement of the technology plan. In evaluating a first year program, understand that it will be a year of constant challenges. Usually, it takes a program into its second year to see the results that are expected or desired. (Loflin, 1995).

Following is a list of questions for you to consider when evaluating the effectiveness of the program.

1. How successful is the technology in helping the faculty and students meet the goals and objectives of the department? (Loflin, 1995.)

2. Are the goals and objectives appropriate or do they need to be revised?

3. If these goals have not been met, what changes need to be made in order to meet those objectives?

4. What problems arose in implementation? How can they best be resolved? What problems are predicted to occur and how may they be prevented to minimize their impact on the program? (Loflin, 1995.)

5. What in your opinion are the strengths and weaknesses of your technology plan?

6. What do you feel your students have learned from using this technology?

7. How will you conduct an on-going evaluation?

Simple observations by students and staff.
Interviews and informal meetings by students and staff.
Written survey or questionnaire at periodic intervals to measure changes.

EVALUATION WORKSHEET - (CONTINUED)

8. How can the technology be expanded to serve more students in a more effective and efficient manner? (Loflin, 1995.)

9. Has the staff training been adequate or does it need to be reevaluated? Does the staff feel positive about the technology plan?

10. Do you plan to keep a record of the number of students in the computer room and of computer usage? Do you find record keeping has been adequate?

Computer-Based Technologies

Computer and peripheral hardware (monitors, keyboards, printers, drives, mice, modems.)
Computer input devices (scanners, touch screens, pens, microphones.)
Local- or wide-area networks (computers and terminals linked over short or long distances), electronic mail, electronic bulletin boards.
Multimedia systems that combine text, graphics, sound, animation, and video (computers connected with devices such as video monitors, laserdisc or videodisc players, CD-ROM players, speech synthesizers, speech boards, audio speakers.)

Some Applications: Computer laboratories for instruction and self-tutoring; audio for help with pronunciation and vocabulary (especially useful with beginning readers and English as a second language students); presentation of information through multiple media (e.g., text, graphics, moving pictures, sound) to reach learners with different learning styles; information networks for teachers and administrators.

Telecommunications Technologies

Broadcast, radio, cable, and satellite networks.
Television sets, VCRs, videodisc players, camcorders, closed-caption decoders, and videocassettes.
Telephone networks, telephones, touch tone, voice mail (see also local- or wide-area networks above.)
Facsimile (fax) machines.

Some Applications: Two-way interactive distance learning; videoconferencing for learners and teachers; television, videocassette, and radio courses to facilitate learning at home; informing public about literacy programs; sharing of courseware and effective practices; large installed base in order to reach many prospective learners who cannot or will not come to programs.

Consumer Electronic Devices

Portable electronic devices (calculator, language translator, hand-held dictionary and encyclopedia, digital books.)
Home videogame machines.
Audio equipment (stereo, compact disc player, tape player, cassettes, books on tape.)

Some Applications: Learning "on the go" or at home, renting courseware for VCRs or game machines, translating between English and another language, hearing correct pronunciation of unfamiliar words, reading books on tape or electronic books.

SOURCE: U.S. Congress, Office of Technology Assessment, 1993.

APPENDIX B. IT CAN BE DONE

When I was given the daunting task to find technology for my Adult Literacy Department with limited funding, I was overwhelmed. I thought that it would be a very, very difficult task to buy technology with the limited monies available and with the caps on spending for equipment. I then decided I was just going to try and see what I could do. I created my technology plan to see where the Department was at with technology and where we wanted to go in the future. I started out with some resources and then I proceeded to look into finding donors and money to purchase/acquire technology. I also needed monies to develop curriculum and software.

After about 2 years we now have three computer labs and most classrooms off and on-site will have PC's in them. Northampton has a very large program serving about 3,000 adult learners. I wanted some centralized labs and PC's available in classrooms both off and on-site.

I sent letters to local businesses and higher education institutions stating that if they were going to upgrade they should consider donating the equipment to the department. I was very successful, and to date we have over 100 PC's donated. I also received a $5,000 donation from a company to purchase PC's. The Department bought 3 486's from the money in order to have some high-tech machines. I am now overwhelmed with what to do with all of the machines and not with where am I going to start.

We also applied for and received a 353 project to connect our student via the internet to another adult literacy provider. Many of my staff attended free classes on computer usage in order to assist them in being more effective in the teaching of computer skills.

Acquiring technology for a literacy center is achievable. All that is needed is a little perseverance and determination.

by Dr. Manuel A. Gonzalez
Northampton Community College

Table I. A Comparison of Integrated Learning Systems and Curricular Systems

	Stands for/Named for	Source/Distribution	Origin/Development/ Revision
PLATO 2000	• Originally: Programmed Logic for Automated Teaching Operation. • Now: Classic Teacher and Philosopher	TRO Learning, Inc. 4660 West 77th St. Edina, MN 55435 (800) 869-2000 FAX: (612) 832-1270	• 1980 TRO Purchase • 1979-William Norris-Control Data Corp. U. of Illinois • Ongoing revision & additions
CCC	Success Maker	Computer Curriculum Corporation 1287 Lawrence Station Rd PO Box 3711 Sunnyside, CA 94088 (800) 227-8324 FAX (408) 745-1766	• 1967-Patrick Suppes, Stanford U. • Strong research base • Ongoing revision and additions. • Acquired by Paramount Communications., Inc., 1990
JOSTENS	INVEST IN THE FUTURE (actual title)	Jostens Learning 7878 North 16th Street Phoenix, AZ 85020-4402 521-8538, 1-800-422-4339 FAX 1-602-230-7034	• Merger of companies E.S.C., Prescription Learning, Hartley, WICAT, & others • (1989) Acquisitions rather than product revision
PALS	Principals of the Alphabet Literacy System • Learning lab including interactive video	IBM/EduQuest 4111 Northside Pkwy Atlanta, GA 55402 (800) 769-8322	• John Henry Martin • JHM Corp.(developer of Write to Read Program) • 1983 (developed) • 1987 (released) • 1992 (CD-ROM)
CCP	Comprehensive Competencies Program • Curriculum system including ILS options	US Basic Skills Investment Corporation 1700 Diagonal Rd, Suite 400 Alexandria, VA 22314 (800) 486-0087 FAX (703) 684-1276	• Robert Taggert/ Remediation & Training Institute. 1983, ongoing revision. • Program model development and replication supported by the Ford Foundation.

	Target Populations	Curriculum Content	Instructional Hours
PLATO 2000	• Designed for teens and adults; skills range from K-12. • Major emphasis- workforce education, CBO, JTPA, corrections, community college	Reading, Math, Language Arts/Writing Science, Social Studies, Computer Awareness, Life Skills, GED, Parenting skills, Substance abuse, Business skills	• I can read = 400 hours • PLATO hrs = 1000 • Distributed courseware =1000 • Total = 2000
CCC	K-12 and adult learners	Math, Reading, Language Arts/Writing, Science, ESL, GED Prep, Life Skills, Computer Literacy.	• Approx. 3000 hours of instruction • Over 40 courses
JOSTENS	• Varies depending upon original developer. • Some specifically for adults.	Basic literacy, ABE, GED prep., ESL, writing, language, arts, workforce	Over 2000 total hours
PALS	• 0- 5th grade reading level; • Originally designed for potential high school dropouts.	• Reading and writing by recognizing different "phonemes." • Learn to touch type on personal computers.	• 1 hour per day, 20 weeks • 100 hours
CCP	Adults in need of basic skills—workers, unemployed, limited English speaking, etc. Also for educationally disadvantages youth.	Academic and functional skills: math, reading, language skills, writing, social studies, science, citizenship, ESL, employability, consumer economics, health & family.	Self-paced system, generally 1-2 reading or math grade gains in 30-34 hours of instruction, 614 lessons

Table I (continued). A Comparison of Integrated Learning Systems and Curricular Systems

	Features/Options	Hardware	Typical Purchase
PLATO 2000	• Interactive voice components delivered through CD-ROM • Remote access for distance delivery to multi-campus and correctional facilities. • *Features* and *other* facilities or system. • Inst/control of learning sequence.	• MS-DOS compatible, LAN or CD-ROM stand alone MS-DOS compatible. • Optional turnkey capability	• File server and 8 work stations plus courseware • Courseware also available separately
CCC	• Dial a Drill using telephone • Sound capability • Delivery at multiple sites • Multi-language, distance • Including courses in: Spanish, Hmong, Chinese, Arabic, Italian, Japanese	• Windows or Macintosh • Apple, IBM, Tandy, Dell, and Zenith • Networked: lab or distributed in classrooms • Stand-alone, CD-ROM student workstation	• 32 station networked lab or distributed model, including hardware and software. • 6,000 for a stand-alone student workstation, including hardware an d software • Over a three-year period, approx. $1 per student per day.
JOSTENS	• Open-entry/open exit system, sound • Hint screens, vocabulary windows, on-screen calculators, on-line tests, multi-media. • Encyclopedia- Compton's (Electronic version of Merriam Webster International Dictionary)	• MS-DOS plus • Windows, Apple II, & Macintosh • ILS	ILS network system- 4 work stations plus stand alone
PALS	• Interactive video disc, Touch-screen technology of IBM • Sound and pronunciation cues. • CD-ROM or laser	• Not networked • IBM PS2-86 and above • Audio playback, M-Motion	PALS Lab includes: • Student • 4-IBM PS 2 systems • 8-IBM PS/2 • PALS work journals • PALS teachers manuals • PALS wall charts • Typing manuals
CCP	• Print-based. • Assessment/diagnostic materials. • Easy to modify. • Multiple options in terms of: instructional. material; commercially available print, video and CAI supplements; management and authoring software; and equipment. • Annual nat'l conference, regional workshops, membership benefits.	• MS-DOS • May or may not be networked • Turnkey available • Instruction does not require computers.	Self-contained course for $300 can serve 8-12 learners simultaneously; computer-ready

Table I (continued). A Comparison of Integrated Learning Systems and Curricular Systems

	Minimum Cost	Learning Theory	Management System Capabilities
PLATO 2000	$49,500	• Competency-based • Sequential skill • Mastery learning • Problem solving software	• Management- performance report showing, mastery/achievement • 3rd party software
CCC	$17,000	Outcome-based education, whole language, cooperative learning, NCTM standards.	• Time, achievement prediction (IPS), • Diagnostic and custom reports
JOSTENS	Equipment $12,581 Software $22,800 Educational Services $7,800	Differing audiences targeted due to differing original developers.	• Placement testing, learner and program management, network management, time on task, lesson objectives mastery. • Materials correlated to JTPA job skills
PALS	$35,000- 50,000	Holistic approach: Integration of writing and reading	Manual
CCP	• Subject curriculum packages from $300-$1100 • Print, CAI, or videotape supplements for each subject from $200-2250. • Example: HS/GED Lab (30 people at a time, 5 subjects) approx. $40,000. • Nonprofit organization, operational costs underwritten by Ford Foundation	•Competency-based, individualized, self-paced instruction. •Program designed to accommodate learners of different ages, at different skill levels, with various learning needs	Combination paper-based and automated system for tracking instruction and test results, collecting participant characteristics, scoring tests, and analyzing and reporting individual and aggregate results.

	Support Systems and Materials	New Product Development
PLATO 2000	• Training- 5 days • Toll free hot-line • Including remote software diagnostics via modem • Software updates • Local educational specialists • Alignment to site curriculum and/or standardized objectives	• PLATO 2000+ to be released spring 1993. All new graphics. • Pre + post tests matching Dept. of Labor competencies for correspondence PLATO curriculum.
CCC	• Implementation and site planning • Staff training and development • Field engineers for installation and maintenance • Toll-Free hot-line • Can use 3rd party software	• Virtual Biopark, Smithsonian • Reading Adventures • Bravo! Books • Math Investigations • Amazonia, Smithsonian • Choosing Success
JOSTENS	• On-going staff development, modem support • Toll-free help-line • Technical support • Capable of running 3rd party software and integrating into management system/.	Full motion video
PALS	• In-service training and implementation support for teachers and administrators • 1 Day	Ongoing
CCP	Support systems Competencies correlated with state objectives including: CA, TX, NY	Ongoing additions and curriculum enhancements.

APPENDIX D. SAMPLE PLAN

NORTHAMPTON COMMUNITY COLLEGE ADULT LITERACY

Plan for Technology

VISION

To provide computer assisted instruction to all adult literacy clients on and off campus.

To train adult literacy staff in the use of technology. To investigate the use of other technologies besides computers.

To make technology an integral part of instruction. To investigate the use of productivity software as related to instruction.

To obtain funding to increase the use of technology in adult literacy classrooms.

To get access of adult literacy staff and students to the Internet.

To investigate the effectiveness of the Josten's system.

To make technology the emphasis for staff development for 1994-1995.

To educate other Adult Literacy providers in the importance of technology.

PRESENT SITUATION

Environmental Scan and Evaluation of Technologies

Adult literacy students who are in JTPA funded programs have the opportunity to use the Josten's lab. They are also able to use Word Perfect 5.0.

Many of the ESL classes use tape recorders as part of instruction. The tape recorders are used in two different modes: listening to conversations, or recording their own voice.

Students enrolled at Northampton County Prison have the ability to use 8 Macs. Students are using all kinds of programs including Word and spreadsheets. The County of Northampton purchased the computers.

Calculators are being used in many of the programs.

Staff Development

Many adult literacy staff do not feel comfortable using technology.

Fourteen instructors have signed up for and taken non-credit classes in computers. Some just took basic DOS, others were and will be involved in Word for Windows and other more sophisticated programs.

Staff feeling is that they do not feel comfortable using computers.

I have requested that our local Staff Development Center provide us with a one-day conference on technology. This is in the planning stages.

NCC's Adult Literacy will hold seminars this fall and spring in the use of technology.

Time Line/Implementation

Date	**Person Responsible**
February 1994	
Develop plan for increasing the use of technology in Adult Literacy	Director
April, 1994	
Submit a 353 project to obtain funding to expose adult lit students to the Internet	Director
June, 1994	
To make technology the emphasis for staff development for 1994-1995	Coordinators
June, 1994	
To work with the foundation of NCC to obtain new computers for off campus sites	Director
June, 1994	
To scrounge for old computers for off campus sites	Director
September, 1994	
To catalogue existing software	J. Huber
Year-long starting summer 1994	
To provide staff training in computers	Administrative Staff

June, 1994

To survey staff about what kinds of training they feel that they need.	T. Marks

October, 1994

To set-up off campus mini labs	Director

Spring, 1995

Send staff to local technology workshop	Staff

SUMMARY AS OF SEPTEMBER 19, 1994

1. We have received a 353 project in conjunction with Lehigh Carbon Community College's Adult Literacy Department to develop a program that will link two providers and students.

2. We have a company that is willing to donate 15 new computers for off-campus sites.

3. Fourteen instructors are taking non-credit classes in computers.

4. We surveyed students during the summer program about the Josten's system. We found out that they really enjoyed using the system. We would like to investigate the effectiveness of activity related software and productivity software.

5. Technology plan is written in rough draft form.

6. LCCC and NCC will present at the PAACE Conference on their new technology program.

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