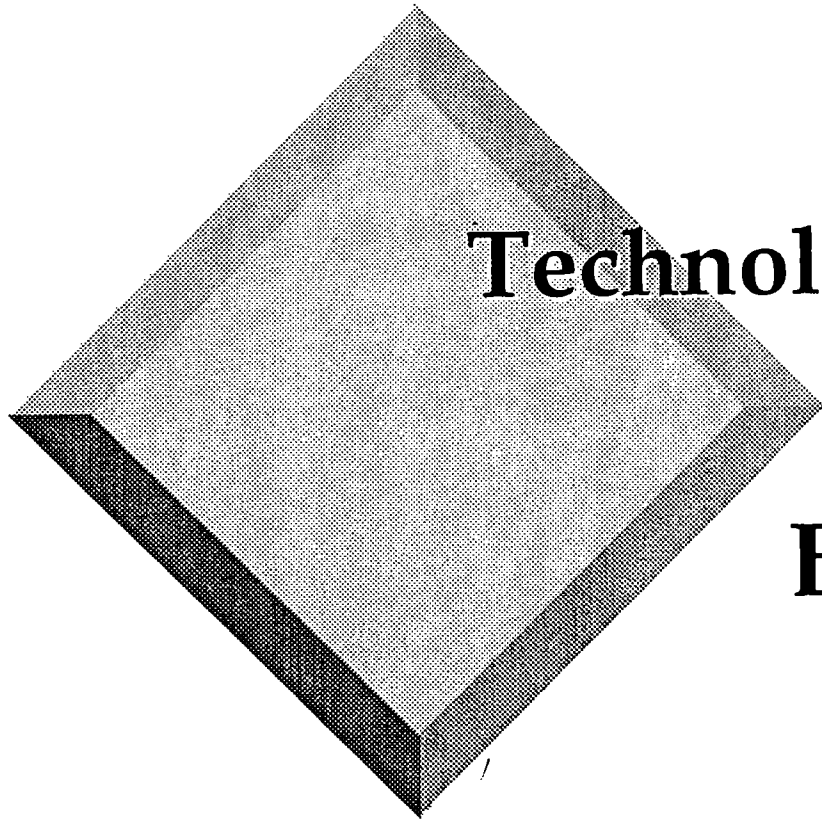


Task #6 - Federal Programs

PHOTOCOPY
PRESERVATION



Technology Learning Challenge Status Report Briefing to ETR

18 August 1994

Technology Learning Challenge Vision

To ensure all Americans access
--anytime and anyplace--
to quality education and training
tailored to their individual learning
and workplace needs

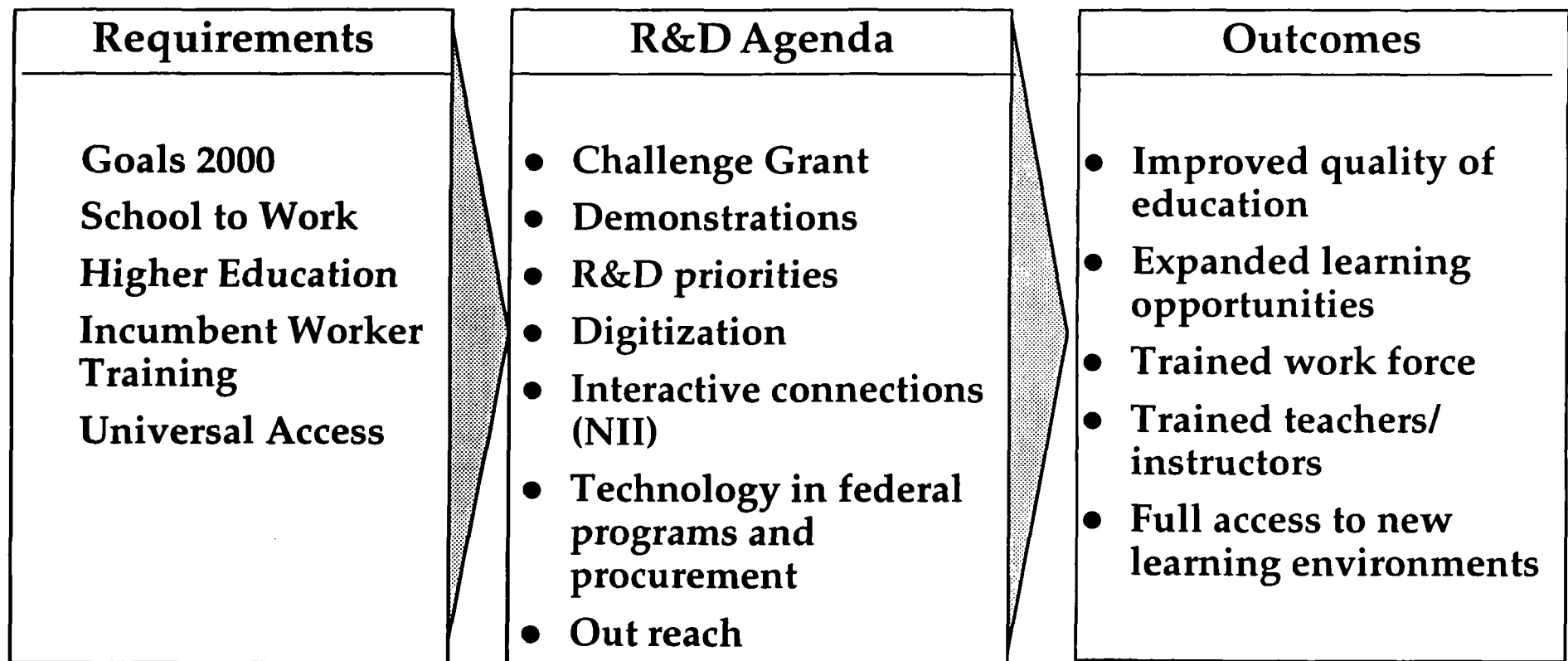
*"The television, the set-top-box, the personal
computer, and the telephone won't exist any more;
their descendants will."*

Fortune Magazine, August 22, 1994

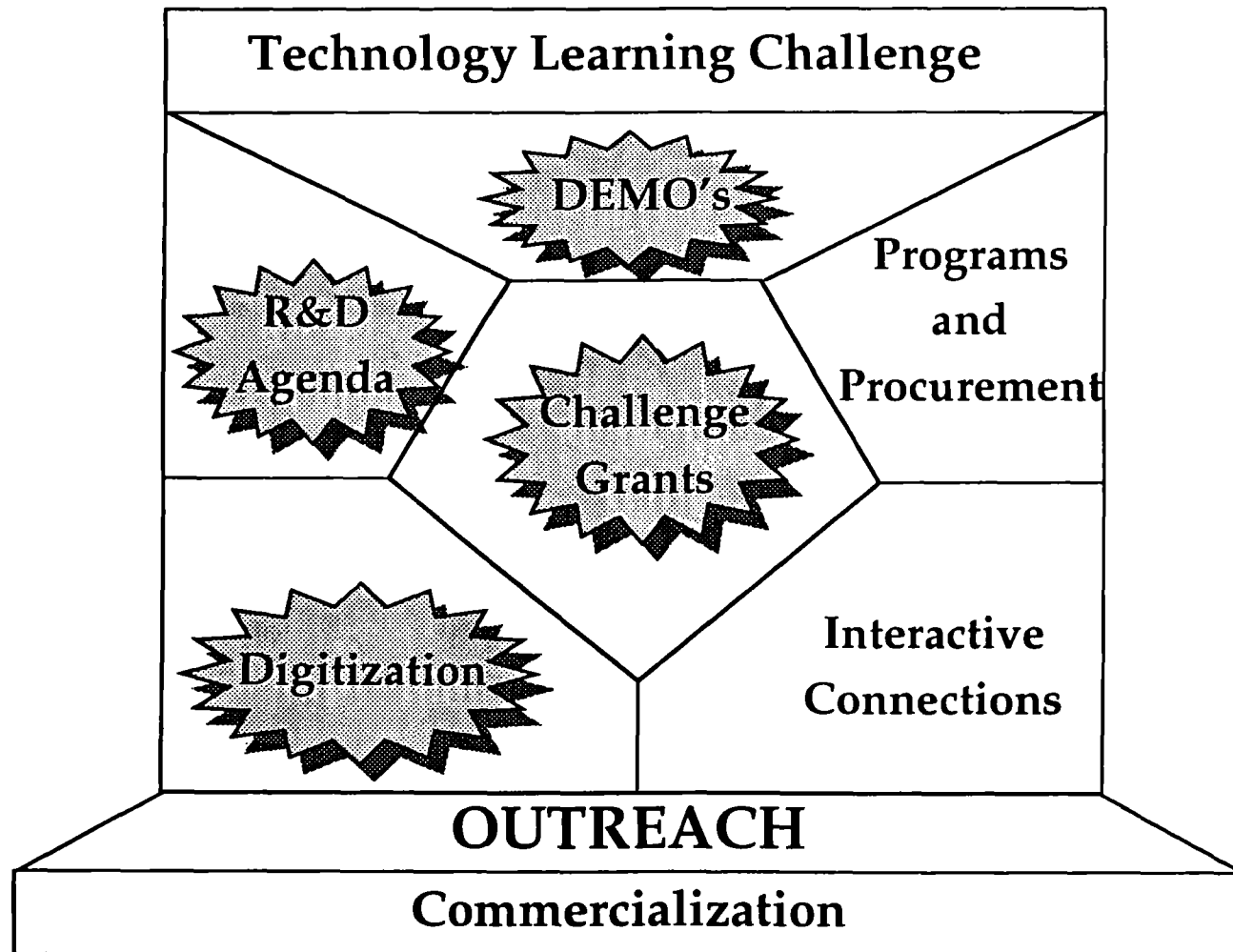
Technology Learning Challenge Goals

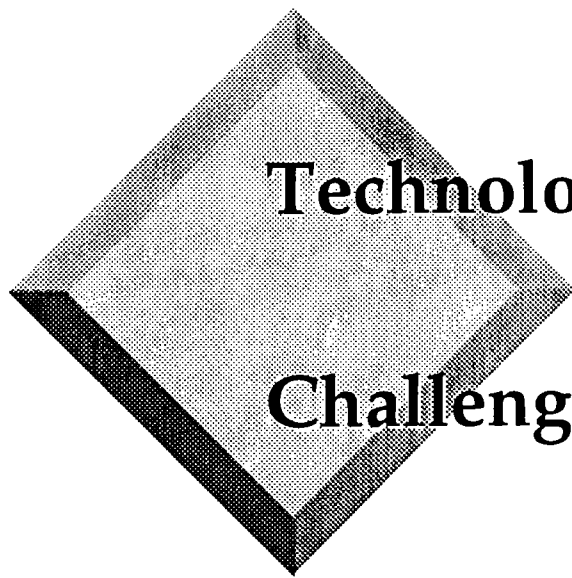
- **Challenge Grant: design, develop and implement new community-based interactive learning environments**
- **Leverage federal research and development to produce scalable demonstrations of advanced learning technologies**
- **Focus and coordinate federal procurement and education and training programs to invigorate learning in schools, workplaces and houses with powerful, interactive learning tools**

Technology Learning Challenge



Task Force on Learning and Technology Components





Technology Learning Challenge

Task 1

Challenge Grant

Challenge Grant Program

Mission:

- To create a nation-wide initiative that will stimulate communities to improve life long learning through the development and use of powerful, interactive learning technologies
- Through a community-based grant program, design and implement creative new uses of technology to advance:
 - ✓ Goals 2000
 - ✓ School to Work
 - ✓ Higher education
 - ✓ Workforce competitiveness objectives

Why is it needed:

- Major under-investment in content
- Markets for learning technology are fragmented and hard to reach--particularly in schools and small businesses
- Requirements for developers are poorly defined
- Products are limited in scope and successful concepts seldom move to large markets

Challenge Grant Program (continued)

Proposal elements:

- Challenge complete learning communities to bring together successful technology applications that help schools, businesses, communities and learners at school, at work and at home
- Modeled after successful elements of Empowerment Zone project
- Covers content--not hardware

Types of communities:

- Communities linked geographically
- Virtual communities linked by common interests

Who could propose:

- Complete learning communities
 - ✓ School systems
 - ✓ Colleges and universities
 - ✓ Local businesses
 - ✓ Content experts
 - ✓ Software designers
 - ✓ Telecommunications firms
 - ✓ Others

Challenge Grant Program (continued)

Proposal Criteria:

- Does it offer a creative new strategic vision for using technology to advance life long learning goals: School-to-Work, Goals 2000, higher education, incumbent worker training?
- Is concept applicable to other communities?
- Are there plans to market the concept more widely?
- Is it part of a comprehensive community plan for education and training; will it continue to be supported by the community as an integral part of its instructional programs?
- What is the extent of investment offered by the partners?
- What benchmarks for measuring success?

Cost--How much?:

- 10-15 grants for \$4-6 M/yr for 4 years
- 100 grants for \$500 K/yr for 4 years

Total: \$100 M/yr

Challenge Grant Program (continued)

Interagency coordination funding:

- DoED, DoL, DoD, DoC, DoE, NSF, NEH, NASA, OSTP, OVP, DPC-NEC, OMB

Federal assistance other than direct challenge grant funding:

- Help set priorities for digitization
- Access to federal resources at labs, NASA and other facilities
- Access to funding for connectivity through DoC/NTIA programs
- Access to NEH program funding by combining application with an NEH application
- Access to state funding for hardware by combining federal and state decision reviews

Management/Funding Options

Option (1) Direct all funding to ARPA in DoD

Pro:

- Comparative ease of adding funding in an agency
- Strong program management abilities
- Proven track record in technology for learning

Con:

- Education not central to DoD mission
- Not consistent with shift to civilian R&D
- Unclear links to ESEA, Goals 2000, School to Work

Management/Funding Options (continued)

Option (2) Direct all funding to DoED

Pro:

- Mission covers most relevant learning communities
- DoED needs an R&D program to support its mission
- Builds on ESEA funding available in FY95

Con:

- Administrative difficulties in getting education programs through appropriations committees
- Little R&D management experience

Management/Funding Options (continued)

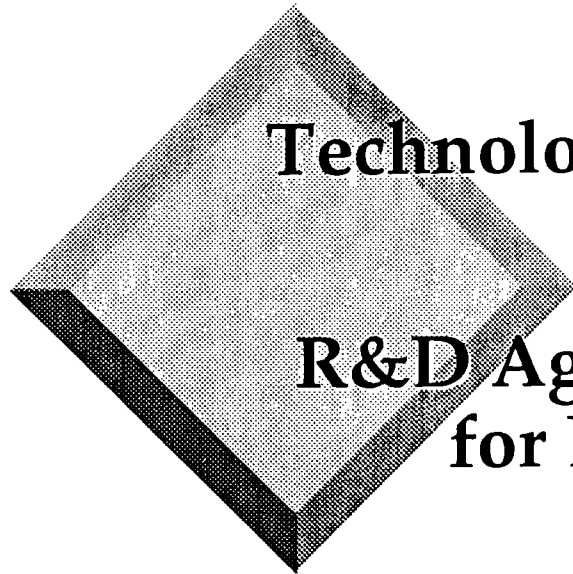
Option (3) Combined programs for children and youth (pre-school through school to work and college) funded through DoED and programs for adults funded through DoD/ARPA

Pro:

- Most likely to achieve total funding needed
- Follows successful model of Empowerment Zones using HUD and USDA funding

Con:

- More complex management
- Funding would require dealing with more Congressional committees
- Could discourage proposals combining programs for children and adults



Technology Learning Challenge

Task 2 & 3

R&D Agenda and Demonstrations for Education and Training Technology

Technology Learning Challenge R&D Agenda Focus Areas

- Undertake basic research on learning and cognitive processes
- Develop new models to evaluate learning productivity
- Develop high-quality, affordable learning tools
- Demonstrate innovative technology and networking applications

Technology Learning Challenge

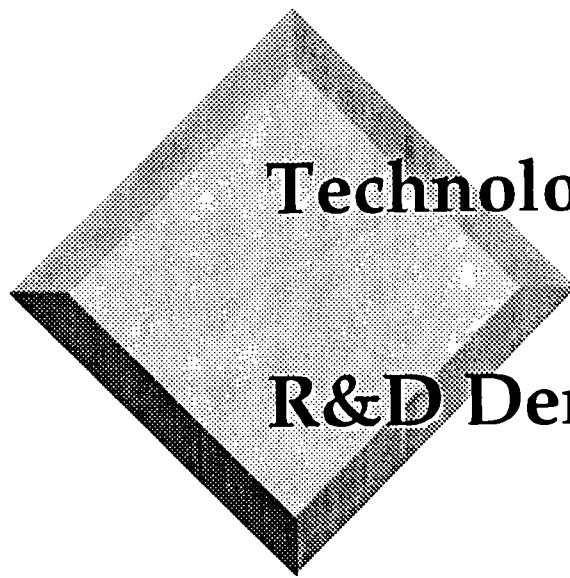
R&D Agenda Focus Areas (continued)

Background:

- Rivlin/Gibbons memo (Aug 5) states that the IITF and ETR reviews will incorporate relevant NSTC assessments in their analyses
- While much work is being done in some of the agencies (i.e., DoD, NASA, DoE), insufficient R&D is focused on interactive learning technologies
- CET and agencies have major responsibility to:
 - ✓ Promote technology transfer to DoL, DoED, DoC and others
 - ✓ Coordinate, supplement and focus community R&D efforts

Recommendations:

- CET should provide the management resources to craft a detailed R&D plan
- CET should define a set of ambitious interactive demonstration projects that can become the focus of interagency collaboration



Technology Learning Challenge

R&D Demonstrations

Demonstration Features

Attributes:

- Scalable
- Sustainable
- Adaptable
- Distributed
- Accessible and ubiquitous
- Commercializable

Management/participation :

- Public/private supported
- Fully funded
- Supported by interagency collaboration

Menu of Demonstrations to Choose From

Administration Program

Goals 2000
School to Work
Incumbent Worker
Training
Re-employment Act
NII Goals
Military Readiness

Target Population

Pre-school
K-8
8-12
School to Work
Higher Education
Incumbent Worker
Training
Disadvantaged/Disabled
Military Personnel

Discipline

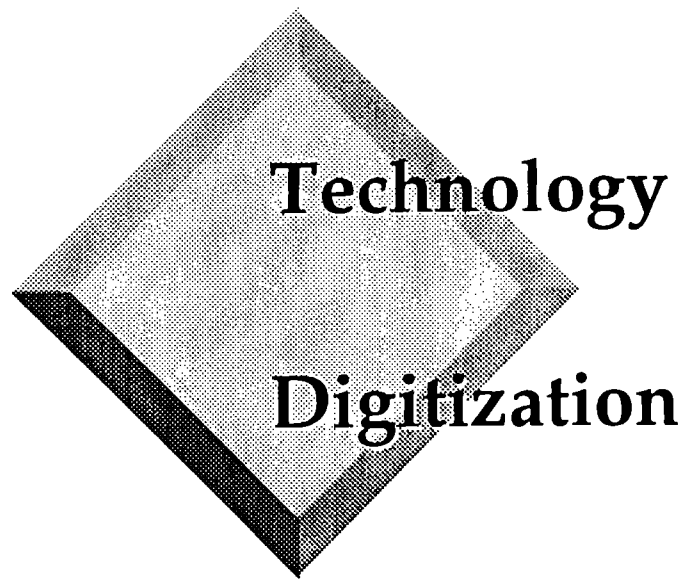
Math
Physical Sciences
Social Sciences
Arts & Humanities
Trades
Business
Behavioral Sciences

Technology Basket

Integrated Courseware
Distance Learning
Re-engineering School
Team Training
Just-in-time Learning
Synthetic Environments

Candidate Demonstrations

Target Groups	Goal	Key Features	Lead Agencies
Pre-School	All students start school ready to learn	An evaluation of the effectiveness of "edutainment" software to teach fundamental skills	DoED
Grades K-8	All student leave grades 4 and 8 having demonstrated competency over challenging subject matter	A cost-effectiveness assessment of interactive courseware and distance learning to improve core skills	DoED
Grades 8-12	Every school in America will ensure that all students learn to use their minds well so they may be prepared for responsible citizenship	A study of the ability of interactive multimedia and synthetic environments to enhance learning across knowledge domains and reform traditional education	DoED
Vocational Ed	All U.S. high school graduates obtain meaningful employment	An evaluation of the benefits of using interactive courseware and distance learning to improve job entry skills	DoED/ DoL
Higher Education	All graduates are equipped for success in the 21st century	A cost-benefit study of the use of models and simulation to advance the quality of higher education and research	DoED
Incumbent Workers	All workers acquire new skills needed in the 21st century	A cost-benefit study of the use of distance learning and just-in-time training technologies	DoL/ DoD
Military Personnel	The U.S. military is the best equipped, trained, and led fighting force in the world	An evaluation of the capabilities and limitations of advanced simulation and distance training to transform the traditional training infrastructure	DoD



Technology Learning Challenge Task 4

Digitization

Task:

- Define options to make federal assets available in digital form and at the lowest possible cost

Status: A systems perspective was adopted to structure the task

- Research & development
- Building collections
- Dissemination
- Grants

For each area

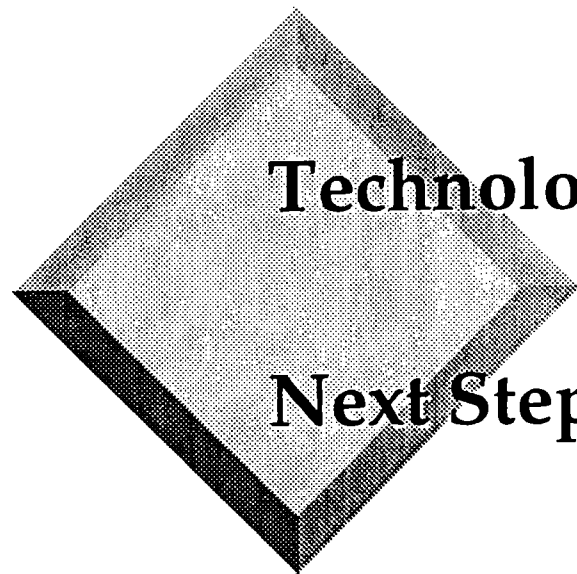
- Current status was established
- A preliminary assessment was made of key needs

Efforts are underway to refine

- Characterization of status
- Key needs

Recommendations

- Redirect Library Services and Construction Act funding to digitization
- Support FY96 funding requests for NEH and Smithsonian
- Provide \$4 million in FY96 to fund digitization of cultural resources for SI, NARA, LoC consortium



Technology Learning Challenge

Next Steps

Technology Learning Challenge

Next Steps

Date	Task	Instrument	Responsibility
18 Aug	- Decision memo to ETR principals on Challenge Grant - R&D agenda and demonstrations recommendation to CET - Digitization recommendations to CET	- Decision memo - White paper - White paper	- ETR (Schmidt) - R&D Subcommittee (Robinson/Finch) - Task Force (Lytel)
9 Sept	Agency budget submissions to OMB	Standard format	Agencies
29 Sept	FY96 priorities on R&D agenda and demonstrations to NSTC	Strategic plan (5-10 page summary)	CET (Kunin/Glynn)
4 Nov	- Federal programs and procurement plans - Formulate Outreach program	- Planning package - Action plan	- Task Force (Portman/Schmidt) - Task Force (Kohlenberger)
TBD	Interactive connections	Planning package	NII Task Force (Sallett/Kalil)
TBD	Public announcements and roll-out	Communication, event, roll-out	OVP with designated agencies

COMMON THEMES RELATED TO PROGRAM DESCRIPTIONS DEVELOPED BY THE FEDERAL PROGRAMS WORKING GROUP TO DATE

The Federal Programs Working Group (FPWG) has been charged by the White House Education, Training, and Re-employment Working Group to achieve two broad objectives:

- To advance the missions of major Federal programs through technology
- To advance the Administration's priority of integrating effective uses of technology into the Nation's education and training system

As part of this effort, representatives of participating agencies have been preparing summaries of relevant programs for use by the FPWG. To date, draft summaries have been circulated for the following programs:

- Compensatory Education (Chapter 1)
- Eisenhower Professional Development
- Job Corps
- School-To-Work
- One-stop Career Center System

Several themes run through the program descriptions. Some of these themes are summarized below, not necessarily in order of importance. Table 1 provides a preliminary overall comparison of the five programs.

1. PROMOTION OF AUTOMATED TOOLS MUST BE CAREFULLY FOCUSED

Education at the K-12 levels in the U.S. remains primarily a state and local enterprise. Re-training and re-employment efforts involving adult workers require the cooperation of government and industry at all levels. In both environments, Federal efforts must be carefully focused. The Federal government can sponsor research, support demonstration projects. It can provide financial support for selected activities. It can stimulate the market for certain kinds of educational technologies. It can strongly influence the role played by technology in the educational programs it manages directly (e.g., Job Corps). But the initiation, testing, acceptance and use of automated tools primarily take place at local levels. Moreover, Federal resources are limited relative to the breadth of technological applications potentially worth pursuing.

The Federal government must target its efforts carefully. For these reasons, the Federal programs summarized in Table 1 focus primarily on stimulating local initiative, on proven, cost-effective technologies, and on developing prototypes with high potential for exportation to wider environments.

2. TARGETED GROUPS PRESENT SIGNIFICANT EDUCATIONAL CHALLENGES

Many of the groups targeted by the Federal programs in Table 1 (e.g., educationally deprived children, disadvantaged youth, individuals seeking to re-enter the work force) present difficult educational challenges. Among other things, individuals in these groups have typically had little exposure to computer-based technologies. This compounds the difficulty inherent in developing automated educational tools. Developmental and demonstration programs must produce effective automated teaching tools working with some of the least promising

target populations. Several of the Federal programs summarized undertake this challenge directly, and there is much of value to be learned from their efforts.

3. TECHNOLOGIES BEING INTEGRATED INTO CLASSROOMS SLOWLY

*Justification
as to
why
we are
doing this*

Examples of automated technologies achieving a central role in teaching programs are still comparatively rare. Reasons include the spotty success records such technologies have exhibited to date, uncertainties concerning the most effective ways to use such technologies, reluctance among educational professionals to alter traditional teaching modes without clear evidence that automation-intensive methods are effective, the need for substantial training in new methods, budgetary restrictions, and more. Effective ways to employ teachers with automated teaching tools in an effective, mutually-reinforcing manner are still emerging. Several of the Federal programs summarized in Table 1 are contributing to this emergence.

4. AUTOMATED TOOLS ARE REACHING CONCEPTUALLY HIGHER LEVELS

Automated tools have established a promising track record in teaching rote skills, testing on subjects involving well-defined, unambiguous answers, and keeping records. The ability to stimulate conceptual thinking involving broader, non-quantitative notions, and to simulate complex learning environments is now beginning to emerge. Several examples of automated teaching tools have been developed in the DoD environment and elsewhere. While not necessarily directly transferable to civilian teaching and training environments, some of the tools developed by the military lay significant groundwork for use in other environments.

The Federal programs summarized in Table 1 are beginning to promote the adaptation of automated learning tools developed elsewhere to the K-12 and worker re-training environments. They are also assisting in their dissemination.

5. COMMERCIALLY-AVAILABLE EDUCATIONAL SOFTWARE IS UNEVEN IN QUALITY

*integrating
into
curriculum*

Effective off-the-shelf educational software packages are still outnumbered by low quality offerings. Despite the apparently large potential market for educational software, the software industry has been slow to develop imaginative, effective automated tools. Reasons include uncertainty among commercial software developers concerning what is needed, the fragmented, unfocused nature of the market for such software, the fact that there are other, more promising markets to be exploited by firms using scarce software development talent (e.g., business applications, computer games), a common belief in the industry that "education doesn't sell", and more.

In this environment, the Federal government has a major role to play. It can promote research on the subject of software "educational quality". It can sponsor demonstration and proof-of-concept projects to develop a clearer picture of ways to exploit automation. It can foster methods for measuring and specifying quality standards for educational and training technology. It can facilitate consensus on technical standards and interoperability. Several of the program initiatives summarized in Table 1 play one or more of these roles.

6. IMPROVED SUCCESS MEASURES ARE NEEDED

The educational literature acknowledges that it is difficult to obtain valid measures of the comparative success of an automated learning tool. Careful empirical studies are needed to show whether a particular automated tool improves learning when used by a significant population as compared to non-automated alternatives. Well constructed studies must deal effectively with complex factors (e.g., differences in educational

background and ability already possessed by participants, test validity, "Hawthorne effects", the degree to which results are statistically significant, the limits to which results can be generalized to wider populations, and more). Such studies require substantial resources. Absent such studies and the guidance they give educational authorities, much time and money can be wasted on shoddy, ineffective products.

The Federal government is well positioned to support such investigations. It can also disseminate the results widely. These results can assist decision makers at all levels to make better use of automated teaching tools. They can also stimulate better instructional products in the private sector. Several Federal programs summarized in Table 1 are sponsoring such investigations.

7. OPPORTUNITIES FOR SYNERGISM

Taken together, the programs summarized in Table 1 confront some of the more difficult educational challenges facing the country today. Many of these programs have significant technological components. In carrying out these programs, there is significant potential for synergism. By carefully assessing each agency's experience with educational technology, and by sharing the lessons of this experience, sponsoring agencies can achieve significant benefits. Technological expertise can be identified and shared. Improved methods for purchasing hardware and software for educational and training purposes can be developed. Private sector markets instructional devices can be stimulated. Improved standards for educational technology can be fostered. Better technical assistance can be rendered.

crosscutting themes

TABLE 1

**CIVILIAN FEDERAL PROGRAMS ORIENTED TOWARD TECHNOLOGY IN EDUCATION:
A PRELIMINARY SUMMARY**

PROGRAM	COMP EDUCATION (CHAPTER 1)	EISENHOWER PROFESSIONAL DEVELOPMENT	JOB CORPS	SCHOOL-TO- WORK	ONE STOP CAREER CENTER SYSTEM
Overall Purpose	Improve educational opportunities in high poverty schools	Promote teaching of mathematics and science	Improve the employability of disadvantaged youth	Create school-to-work systems for all youth in all areas of the country	Help integrate delivery of career transition information and services for job seekers and employers
Lead Agency	Department of Education	Department of Education	Department of Labor		Department of Labor
Planned Expenditures	\$6.7 billion (all programs)		\$2.9 million for ADP		
Target Population(s)	Educationally deprived children, Teachers, Administrators	Teachers of mathematics and science, Administrators	Disadvantaged youth seeking to enter work force	All youth seeking to enter the work force	All job seekers (but especially those seeking re-employment) and all employers
Principal Uses Of Technology Currently Supported By Program	Computer laboratories in schools	Networking to promote sharing of instructional materials, instructional videodisks and software	Computer Managed Instruction (CM) system supporting record keeping, diagnosis, assignment, testing and tracking	To be decided by local grant recipients	To be identified by local grant recipients
Related Technology-based Activities Supported	Technical Assistance Centers, Rural Technical Assistance Centers	Forums for promoting technology		To be decided by local grant recipients	Technology-based proposals from grant applicants encouraged
Planned Expansion of Automated Tools	Connection of standalone systems to networks		Job Corps ADP System, Educational software packages usable with LANs		Expanded use of Training Technology Resource Center
Research, Demonstration or Evaluations Underway		Annual performance reports from states		To be proposed by local grant recipients	

discretionary
uses of
\$?

Draft Outline for White Paper

Learning Technologies in the Federal Workplace

I. Introduction

- A. Brief description and background of HRDC
- B. Description of contents of White Paper

Focus on learning productivity in the federal government.

C. Goals of the paper

- 1. How are learning technologies being used to provide a lever to help train the federal workforce? (...in the context of helping accomplish Goals 2000?)

Look at:

- a. Categories of training -- what and why
- b. Unmet desires -- what and why
- c. Enablers
- d. Barriers

- 2. Identify issue areas *re: utilizing technology*
- 3. Make recommendations for action by Executive Branch

II. Background

A. General assumptions

- 1. Past and present RE: training
 - a. Federal (civilian and military)
 - b. General (business & industry, education)
- 2. Workforce trends and the impact on training
- 3. Projections about the future

B. Issues

- 1. What is the current role of learning technologies in training the federal workforce?
 - a. What is the federal government doing today?
 - b. ... to what extent?
 - (1) Collective Efforts (government-wide)

(2) Individual (agency/dept/office) examples

c. What's working and why?

d. What's not working and why?

2. What are the gaps? Why?

C. Technology tools and processes

1. Review of the state of the art of technologies

2. Definitions in appendix?

3. Moving from teaching (training) to learning

III. Recommendations

IV. References and Resources

To: Mike
Schmidt

From: Anna

Doroshaw

DATA COLLECTION, QUESTIONS, RESEARCH ISSUES

1. What technologies are in use?
2. Where are they being used?
3. What are they being used for? How are they being applied?
4. Why and how were decisions made to invest?
5. What are the elements leading to success?
6. What have been the barriers to success?
7. How have individuals/groups/agencies overcome barriers?
8. What barriers have been insurmountable? (What makes the difference in some organizations dealing with the same barriers? What makes them insurmountable in some places and not in others?)
9. What is needed to improve the utilization of existing systems and help integrate new technologies and approaches into federal training approaches?

Please make specific recommendations and provide examples of ideas as appropriate.

10. What organizations exist within the government to facilitate the use of technology -- resources, equipment, systems, methodologies, and experience...?

What organizations exist outside the federal community (private sector, non-profit, professional associations, etc.)?

Where can or should support for the use and application of learning technologies reside?

MITRE**A020 FAX COVER SHEET**DATE: Thursday, September 29, 1994TO: Fed. Prog. WGADDRESS: Task Force on Learning & TechnologyRECIPIENT'S PHONE NUMBER: Distribution

TARGET TELECOPIER NUMBER: _____

FROM: Mike HarringtonADDRESS: The MITRE CorpSENDER'S PHONE NUMBER: 703/883/6658SENDER'S FAX NUMBER: 703/883-6190

COMMENTS:

Here are some advance materials for the meeting tomorrow. I will bring paper copies with me.

NUMBER OF PAGES TO FOLLOW: ~~18~~ 5+5 ✓

Job Corps: Its Mission and Learning Technology

Background

Job Corps is a major national training and employment program administered by the Department of Labor to address the multiple barriers to employment faced by disadvantaged youth throughout the United States. Its residential aspect distinguishes Job Corps from other employment and training programs and enables Job Corps to provide a comprehensive array of services in one setting 24 hour a day, seven days a week. Approximately 90% of students are residential; the remainder commute to the centers daily. Enrollment in Job Corps is voluntary, and programs are open-entry, open-exit and individually-paced to allow students to progress at their full potential. The array of services provided by Job Corps include:

- Entry diagnostic testing of reading and math levels
- Occupational exploration programs and world of work training
- A comprehensive basic education program, including reading, math, GED, health education, parenting, introduction to computers and drivers education
- Competency-based vocational education programs
- Intergroup relations/cultural awareness programs
- Social skills training
- Counseling and related support services
- Regular student progress reviews
- Student government and leadership programs
- Community service through volunteer and vocational skills training programs
- Work experience programs
- Health care
- Substance abuse programs
- Recreation programs and avocational activities
- Meals and lodging
- Clothing
- A structured, incentive-based allowance system
- Child care support
- Post-program placement and support

Learning Technology and the Job Corps Mission

An innovative Computer Managed Instruction (CMI) system has begun to be phased into all Job Corps center education programs during the past two years. The newly designed CMI system automates many of the tasks that instructors and administrators have found tedious and time consuming. By eliminating manual records and assisting with the scoring

and recording of assignments, the system frees instructors to spend more time with students in individual and small group instruction.

The CMI system enables Job Corps to offer a comprehensive, integrated education approach that allows teachers to assign instructional materials based on individual student needs. By means of computer-managed diagnosis, assignment, testing and tracking, the new Job Corps Education Program links the best conventional materials and audio-visuals with computer-assisted instruction, in a technologically advanced and individually responsive educational system.

CMI System terminals in the classroom have served to motivate students while increasing their responsibility for their academic training. Being able to logically think their way through the system by selecting menu options and choosing prompts to update their progress while increasing their computer literacy, students are gaining valuable skills for entering the workplace. The open-entry, open-exit enrollment results in students working at all levels of the curricula within the same classroom. Prior to the CMI System, completing placement and providing diagnostic information, instructors would spend valuable class time assessing where to begin working with the student instead of beginning the appropriate assignments.

Currently, the CMI Systems provides automated instructional management for the following academic curriculum areas:

- Basic Reading
- Graded Reading
- Math
- GED
- Writing/Thinking Skills
- World of Work

Vocational curricula will be the next area to come automated, while residential programs such as Social Skills Training, Student Orientation and Student Program Evaluation will follow.

FY95 Actions for Accelerating the Use of Learning Technologies

During the past five years Job Corps has made a concerted effort to take advantage of advances in technology in the areas of student records, student pay and instructional management. Over the next two to five years the CMI System (described above) will become a component of a larger Job Corps Automated Data Processing (ADP) System. The new ADP system will facilitate interconnectivity between the existing Job Corps data systems, including the Student Pay and Allotment Management Information System (SPAMIS), and new systems, including a standard local MIS, a Scheduler, and other program components.

Job Corps has increased its overall budget for ADP from 1.4 million in FY 94 to 2.9 million dollars in FY95 in order to produce an extensive upgrade of its data center. This large increase in funding will result in a telecommunications network connecting critical Job Corps management and support functions via a central data facility. It will use the transmission of student specific enrollment, allowance, status, and termination data and other administrative communications.

Presently, centers use their own corporate or agency developed management information systems. However, with this expansion of the Job Corps Data Center DOL plans to develop and distribute a standard center MIS system. Plans are already drawn to expand and incorporate the Computer Managed Instruction system described earlier. Other program components slated for automation include student scheduling, counseling, behavior management and student progress and evaluation.

As a part of these planned FY95 measures, Job Corps stands poised to facilitate the inclusion of the DoD learning technology by:

- Accommodating learning technology into future software development,
- Reviewing DoD training materials for adoption into Job Corps curricula (if appropriate), and
- Including the potential use of Learning technology in all Job Corps classrooms, shops, dormitories, and offices as a part of all future procurement.

FY 95 funds have been set aside by Job Corps to pilot educational software packages in an Local Area Network environment. While several packages have been contemplated for review, DoD's Fundamental Skills Training (FST) stands out as an excellent package of materials. A preliminary examination of this material indicates that this "Intelligent Tutoring System" could serve as an excellent supplemental package for Job Corps' education program. The FST is an adaptive, computer-based training system that provides diagnostic, individualized instruction to students. The Department of Defense's Armstrong Laboratory developed this program to improve 9th grade critical thinking skills in mathematics, reading/writing and science. Its Word Problem Solving tutor focuses on teaching students to analyze word problems and write correct equations. In addition, its reading/writing and science programs help students and instructors analytically approach these areas. The programs use state-of-the-art color graphics and can be adapted to students performing at different competency levels. Job Corps plans to pilot these materials in FY 95, if arrangements can be made to obtain software support within its existing budget parameters.

Options for FY96 and Beyond

Job Corps is committed to creating a meaningful context for learning, rather than simply providing passive listening or watching abstract demonstrations. The application of interactive learning technology can establish an atmosphere where students become active

participants in a community of learning. Students can begin to learn new ways to communicate complex ideas and experiences, using the interactive learning tools required of them by the high performance workplaces of the future. The general education, technical training, and workplaces skills learning technology developed by DoD may have the potential to greatly enhance the interpersonal and teamwork skills, thinking skills and basic academic skills presently taught in the Job Corps Curricula.

Job Corps stands ready to more comprehensively meet its mission by employing maximum use of DoD learning technology. Such an application of these learning tools could be made over the course of the next five years in order to:

- Provide the Job Corps system with management tools for instructional design and course selection based upon job market trends;
- Integrate workplace, vocational, and education skills and allow centers to tailor a comprehensive training plan for each student;
- Integrate traditional and computer-based instruction in all training areas;
- More effectively monitor student progress by providing instructors, counselors, and residential advisors with real-time reports;
- Provide "learning on demand" for vocational students as they work on training projects;
- Allow students to access interactive training programs during evenings and weekends;
- Allow staff to access interactive training programs as a part of their in-service training and
- Offer students elective courses such as typing, personal finance, and foreign languages

While Job Corps is not prepared to modify existing DoD software for its use, it is prepared to establish three pilot centers equipped with trained staff to utilize a fully integrated training delivery system which would take full advantage of applicable DoD learning innovations. In order for a valid pilot to be conducted, \$1,250,000 from sources other than the Job Corps budget would be needed. The current Job Corps budget can not accommodate such a large project. If funds were made available, pilot centers would begin full operation in early 1996.

Potentially Applicable Learning Technologies

In addition to the general goals outlined in the previous section, Job Corps has identified a number of specific learning technologies programs which it feels have potential application to for its training programs. These programs could greatly enhance vocational

training program in two ways. First, particular programs have been identified which could serve to assist national policy makers in more effectively matching vocational training offerings with regional job market conditions. Second, the DoD has developed several programs designed to provide trainers with the capability to more economically and efficiently plan lessons and then author their own software. Below is a listing of specific programs which have been identified, a description of the program and the potential application it may have to the Job Corps program:

Fundamental Skills Training: Described in detail above.

Intelligent Computer-assisted Training Testbed: A program designed to provide a proof of concept and demonstration of how this can be achieved by developing, testing and demonstrating prototype software tool, called authoring shells in the field. ICATT could allow Job Corps instructors and curricula developers to economically author their own training software. At the very least, the program may allow the Job Corps training community to develop a comprehensive criterion referenced test bank which could be used throughout its system.

Virtual Environment Based Intelligent Tutoring System Authoring Tools: Software will allow instructional designers and subject matter experts with little or no computer experience to develop, deliver and maintain programs that use virtual environments to train students how to perform a variety of tasks. If proven cost effective, this technology could allow Job Corps centers in remote areas to offer training not available from either local institutions or employers. Such programs might also provide training on centers without the purchase of costly training equipment.

Training Impact Decision System and Intelligent Instructional Design Tools: Programs developed to support tools that simplify the design and development of high quality learning systems. Such programs could provide Job Corps training specialists with tools to design new training programs and the ability to quickly and effectively up-date them.

Training Efficiency and Effectiveness Methodology: A management information system that is designed for training manager and course personnel. The program could allow Job Corps professionals to compare the amount of time spent in training on a task with the field recommended training emphasis for that task. This could allow instructors to provide a more balanced and employer driven training program.



**U.S. Department of Education
Office of the Deputy Secretary
400 Maryland Avenue, SW
Washington, DC 20202**

DATE: 10-20-94

TO: Mike Schmidt

ORGANIZATION: DPC

PHONE: _____ **FAX:** _____

FROM: Jonathan Hoyt

PHONE: _____ **FAX:** _____

MESSAGE:

Mike,

Please take some time to review these, especially the other steps. I plan to fax out comments to the authors tomorrow & would like to talk with you before I do.

Jonathan

16

DRAFT 10/04/94

Task Force on the Use of Technology in Federal Programs

1. Description of Purpose/Program

The purpose of the Carl D. Perkins Vocational and Applied Technology Education Act is:

to make the United States more competitive in the world economy by developing more fully the academic and occupational skills of all segments of the population. This purpose will principally be achieved through concentrating resources on improving educational programs leading to academic and occupational skill competencies needed to work in a technologically advanced society. (20 U.S.C. 2301, § 2)

2. How can technology advance the mission (if technology can do it better, what does "better" look like)?

Technology can advance the mission of the Perkins Act by contributing to the development of high standards and quality outcomes for vocational education programs and by improving the delivery of services. In order to meet the challenges of a world economy characterized by rapidly advancing technology and increasingly high-performance work organization, the Perkins Act must prepare individuals for greater proficiency in a wider range of academic and occupational skills. The 1990 amendments to the Perkins Act contain key provisions which can be better implemented through the use of technology.

Vocational education programs are required by these provisions to emphasize high quality academic and occupational training. Technology can be instrumental in broadening vocational education programs through activities such as curriculum development and professional development, and upon the coordination of these programs with other education, training and workforce development initiatives.

Two critical areas which can benefit substantively from the use of technology, perhaps for professional development and in-service training activities include:

- integration of academic and vocational education through a coherent sequence of courses, to provide strong development and use of problem solving and basic and advanced academics such as mathematics, reading, writing, science and social studies, and

- providing students with strong understanding of and experience in all aspects of the industry the students are preparing to enter, including planning, management, finance, technical and production skills, underlying principles of technology, labor, community, and health, safety and environment.

3. What is the target audience of the program? Are there particular target groups in regard to technology use?

The Carl D. Perkins Act is administered primarily through a Basic Grant program which funds States and localities with formula grants that are used to improve the quality of vocational education programs for all students.

In addition, the Perkins Act funds tech-prep education, tribally controlled postsecondary vocational institutions, state councils of vocational education, and national programs including demonstrations, research and data systems.

The Act also contains equity provisions to ensure that students who are members of "special populations" are provided full access to programs and the supplemental services they need to succeed. Members of "special populations" include low-income individuals, low-achieving individuals, individuals with disabilities, individuals of limited English proficiency, individuals in programs designed to eliminate sex bias, and individuals in correctional institutions. The use of technology in providing tutorial learning experiences for students with special needs is a potential application for the physically challenged. In economically isolated areas, distance learning, simulated work environments and other applications of technology may provide higher quality learning experiences for students.

Increased flexibility under ESEA, which includes substantial amounts for technology, can be used to link with activities under Perkins, such as equipment purchases for computer hardware and software. In these ways, technology may help provide a high quality vocational education for all students.

4. Is there research or evaluation of how technology is being used to address the goals of the program now?

We are not aware of any significant evaluation of the use of technology in vocational technical education. It should be noted that the American Vocational Association, in their September 1994 Journal, dedicated an issue to the impact of electronic technology on vocational-technical education. They also began the first of a series of articles featuring high tech hardware and software to teach the job skills students need to succeed in the workplace.

5. What types of technology applications are most relevant for this program area?

Having used rigidly designed, drill-and-practice programs of the past, many vocational teachers are skeptical of computer-assisted technology. Such programs involved little more than

workbook lessons onto the screen.

Many of the technology applications that are useful in other disciplines are just as powerful, when adapted, for vocational-technical education. For example:

- Personal Computers: Vocational-technical students need these to retrieve data and compose papers.
 - Electronic mail: Provides access to research databases and special periodicals as well as the possibility of working on projects with students across the world.
 - Interactive videodiscs: Can store and retrieve massive amounts of information in the form of video, sound, and text providing high quality lessons in diverse occupational areas.
 - Intelligent Tutoring Systems: Students can get unlimited practice on a variety of topics, from a medical technique to brake repair, and can move ahead to more complex materials when prepared. This tool is useful as an assessment technique.
 - Simulation Software: Design students through the use of software such as AutoCAD can create a drawing without ever touching a pencil. DOD has been a leader in the development of such software with applications in everything from construction technology to jet engine repair. The spinoff possibilities are legion.
 - Distance Learning Tools: Increases the possibility of equal access to a quality education for all students, especially in rural areas where resources are limited for certain programs.
6. What programmatic authority exists to implement technology in a way which advances the mission of this program?

Based on the 1990 amendments to Perkins and the broad framework provided by the School-to-Work Opportunities Act, technology has the potential to transform Perkins into radically broader program.

Several types of programmatic interventions are recommended, and technology can be used to significantly improve the content and delivery of all of these services. Specifically, the Act authorizes the following range of activities, among others:

- curriculum development
- equipment modification
- classroom modification
- instructional aids and devices
- guidance, counseling and career development activities and services and

-- information concerning employment opportunities.

Technology can be instrumental in developing each of the above activities and in forging information and labor market information networks which link vocational education with the wider arena of education, training and employment programs and services in a State or locality, as well as at the federal level in coordinating related initiatives.

7. What programmatic authority exists to implement technology in a way that advances the mission of the program?

Perkins funds would fall under the category of "funds that may be used for educational technology." The basic state grant and Tech-Prep Education funds are used for training using technology, but not necessarily through the use of technology.

Title IV of the Perkins Act contains provisions for the Secretary of Education to make grants to non-profit educational telecommunication entities to produce and distribute instruction material and services.

8. What program funds are now being used to support technology and related services and training?

Perkins funds within districts may be used for virtually any activity as long as the activity provides equitable participation to special populations and as long as the goal is to enhance vocational education in a school or program.

According to survey results, the most frequent use of Basic Grant funds for programs by school districts with individual grants were for purchase of materials (76% of districts for such things as computers, software, curricula for learning labs or other remedial programs) followed by investments in professional development to implement new programs.

In addition, a substantial number of funded Perkins demonstration projects carry out activities related to "computers" or "technology."

9. What specific action steps are needed?

The Administration is currently preparing a reauthorization proposal for the Perkins Act for submission in FY 96 and consideration as part of the FY 97 budget proposal. The reauthorization proposal can contain provisions which support the use of technology in providing high quality vocational education programs.

any informal steps
that could be taken?

IMPLEMENTATION PLAN

COMPENSATORY EDUCATION (CHAPTER 1)

What is the purpose of the program?

- * Provides about \$6.7 billion to local education agencies to improve the educational opportunities of educationally deprived children in high poverty schools by helping those children to succeed in the regular classroom, attain grade-level proficiency, and improve achievements in basic and more advanced skills.
- * Provides financial assistance to local educational agencies to meet the special educational needs of educationally deprived children at the preschool, elementary, and secondary school levels.

How can technology advance the mission?

- * Technology is now a central part of the way Chapter 1 funds are used and will also be for Title I. However, dollars spent for technology typically support computer laboratories in schools that provide only limited access to resources and are used to operate software that drills students on basic skills. These schools are not usually linked to resources outside the school, such as Internet.
- * Technology could more effectively advance Title I's mission by supporting connections to networks and by identifying and promoting instructional applications of higher quality.

What is the target audience for the program? Are there particular target groups in regards to technology use?

The primary target audience for the Title I program are the students served by the projects/programs funded under the provisions of the legislation. With regard to technology use, the universe of users enlarges to include teachers and administrators who operate the technology either to teach the students, administer Title I programs, or communicate with each other about various aspects of their Title I programs.

Is there evidence of how technology is helping to address the goals of the program now?

Although the use of technology in Chapter 1 programs is quite extensive, there is little evidence through national studies that demonstrate significant relationships between specific technological applications and increases in student performance. Locally conducted evaluations are the rule.

ED monitoring teams and providers of technical assistance to Chapter 1 teachers and administrators have observed many problems in the application of technology to the education of disadvantaged children. Chief among them are the following:

There are lots of hardware and software functioning either as Integrated Learning Systems (ILS) or as Computer Aided Instruction (CAI) in Chapter 1 projects, but applications typically have been limited to computer labs where the software is often not aligned with the curriculum or with instruction.

Most CAI and ILS applications teach basic skills by drill and practice. There is not a lot of software written to develop higher-order thinking skills or reading comprehension skills (the software used for the HOTS program is a notable exception), although this is changing.

Practitioners are reluctant to use computer networks for several reasons:

- there is not a lot of useful information on the networks (of particular interest to educators are good program model descriptions and names and addresses of developers).
- face-to-face contact is really important to teachers.

With new assessment measures coming into use, student performance tracking by computer is too reductionist to provide much useful information.

What types of technology applications will be most relevant or useful in Title I?

ILS or CAI applications that focus on teaching higher order/complex thinking skills and reading comprehension.

Systems for reviewing and rating computer software and procedures for aligning software with curriculum and instruction.

Information systems for storing relevant data on promising practices and school reform and allowing practitioners to communicate with each other.

Distance learning technology and applications.

What is the current federal mechanism/policy for promoting technology - if any - in Chapter 1?

Under the Chapter 1 regulations, expenditures are allowable for the acquisition of equipment and instructional materials, a category which would include the purchase of most technology. However, the specific decision about what to buy is solely that of local school districts. The language in Title I authorizing expenditures is basically the same as that of Chapter 1, with the exception that expenditures for technology is written in the context of helping students meet the standards and increase their learning.

1577 + 415
Dall & Kill
Staff
by Kate

The Aguilar v Felton Supreme Court decision prohibiting public school personnel from providing instructional services in private religious schools to children participating in Chapter 1 has also been instrumental in increasing the use of ILS for this population.

The Chapter 1 Technical Assistance Centers and Rural Technical Assistance Centers provide assistance to State administrators and to local education practitioners on the use of technology in Chapter 1, including the use of distance learning.

Unlike Chapter 1, Title I contains the authority for demonstration grants. Although one of the priority areas for funding could be technology, this program will not be funded in FY 1995.

What policy issues does the use of technology raise for Title I?

Some of the policy issues to be addressed prior to developing an action plan for the use of technology in supporting the education of disadvantaged children include:

What technology is effective in educating disadvantaged children and in supporting the administration of Title I programs?

Should a review and assessment system for ILS and CAI software be established? If so, how? Should ED sponsor the review and rating of ILS and CAI software? of other educational technology?

What should the role of ED in promoting the use of educational technology be?

How can the use of technology support educational reform?

If program funds are not being used to support technology-based learning, why is this the case?

Program funds are being used to support technology-based education, but such funding decisions are solely under the jurisdiction of local educational agencies (LEA). The demonstration authority in Title I, under which technology demonstration grants would have been authorized, was not funded by Congress.

What is the estimated amount of program funds used now for technology and related services and training?

It is estimated that annually approximately 15%, or \$400 million, in Chapter 1 money supports school purchases of computer equipment, hardware, and software.

What forums for technology demonstrations or outreach are available?

In the past, Chapter 1 has sponsored annual national and periodic regional conferences, although that has been superseded in 1994 by an overall OESE-sponsored conference. The Chapter 1 Technical Assistance Centers and CEP monitoring staff are aware of some technology applications and provide assistance, where appropriate and requested, to State and local jurisdictions on the use of this technology.

ACTION PLAN

The following steps are proposed for the Title I action plan:

- * Request PES to conduct a study pulling together the research studies relating technology to learning effects among disadvantaged students and to gather examples of and information about promising educational practices that involve technology. In conjunction with PES, develop an agenda for the national evaluation of technology in educating disadvantaged youth.
- * In conjunction with OERI, identify unmet research needs in the use of technology for the education of disadvantaged youth and develop a research agenda.
- * Review the various options for the assessment of technology and develop a Departmental policy, to include the role the Department should assume in the assessment process.
- * Develop strategies to increase effective technology use with Title I funds during FY 1995 implementation and to effectively integrate technology into the school reform process. Develop a vision statement for how Title I will support the National Information Infrastructure (NII) and learning technologies.
- * Develop a strategy to communicate with, and provide technical assistance to, State and local Title I program administrators - who decide how program dollars are spent - on promoting the effective uses of technology.
- * Develop means of ongoing technical assistance for the use of technology in Title I.

Great!

See also next 2 pages

DRAFT

TITLE I FEDERAL POLICY OPTIONS FOR THE ASSESSMENT OF TECHNOLOGY

Technical Assistance

1. Provide technical assistance to SEAs and LEAs in such areas as:
 - acquisition and use of technology
 - assessment of technology
 - research findings
2. Develop contract specifications for TACs to provide technical assistance in technology.
3. Develop Title I technology packages for INET (e.g., assessments, assessment procedures, acquisition).

Assessment of Technology

1. Assess effectiveness of technology for LEA use.
2. Develop standards for acquisition and effective use of technology.
3. Sponsor a medium for the development of standards for acquisition and effective use of technology.

Direct Support Activities

1. Act as a catalyst to get SEAs and LEAs to consolidate technology purchases for:
 - lower cost
 - higher student achievement.
2. Expand the Title I Recognition Program to include projects which demonstrate the effective use of technology.
3. Identify barriers to the effective use of technology by SEAs and LEAs and develop strategies for overcoming barriers.

Coordination

1. **Coordinate Title I technology initiatives with other major assessments of technology (e.g., National Information Infrastructure, ED Office of Technology, Center for Research on the Education of Students Placed at Risk [CRESPAR], Goals 2000, education organizations, Software Publishers Association, SEAs, and other Federal agencies).**

Job Corps: Its Mission and Learning Technology

Background

Job Corps is a major national training and employment program administered by the Department of Labor to address the multiple barriers to employment faced by disadvantaged youth throughout the United States. Its residential aspect distinguishes Job Corps from other employment and training programs and enables Job Corps to provide a comprehensive array of services in one setting 24 hour a day, seven days a week. Approximately 90% of students are residential; the remainder commute to the centers daily. Enrollment in Job Corps is voluntary, and programs are open-entry, open-exit and individually-paced to allow students to progress at their full potential. The array of services provided by Job Corps include:

- Entry diagnostic testing of reading and math levels
- Occupational exploration programs and world of work training
- A comprehensive basic education program, including reading, math, GED, health education, parenting, introduction to computers and drivers education
- Competency-based vocational education programs
- Intergroup relations/cultural awareness programs
- Social skills training
- Counseling and related support services
- Regular student progress reviews
- Student government and leadership programs
- Community service through volunteer and vocational skills training programs
- Work experience programs
- Health care
- Substance abuse programs
- Recreation programs and avocational activities
- Meals and lodging
- Clothing
- A structured, incentive-based allowance system
- Child care support
- Post-program placement and support

Learning Technology and the Job Corps Mission

An innovative Computer Managed Instruction (CMI) system has begun to be phased into all Job Corps center education programs during the past two years. The newly designed CMI system automates many of the tasks that instructors and administrators have found tedious and time consuming. By eliminating manual records and assisting with the scoring

and recording of assignments, the system frees instructors to spend more time with students in individual and small group instruction.

The CMI system enables Job Corps to offer a comprehensive, integrated education approach that allows teachers to assign instructional materials based on individual student needs. By means of computer-managed diagnosis, assignment, testing and tracking, the new Job Corps Education Program links the best conventional materials and audio-visuals with computer-assisted instruction, in a technologically advanced and individually responsive educational system.

CMI System terminals in the classroom have served to motivate students while increasing their responsibility for their academic training. Being able to logically think their way through the system by selecting menu options and choosing prompts to update their progress while increasing their computer literacy, students are gaining valuable skills for entering the workplace. The open-entry, open-exit enrollment results in students working at all levels of the curricula within the same classroom. Prior to the CMI System, completing placement and providing diagnostic information, instructors would spend valuable class time assessing where to begin working with the student instead of beginning the appropriate assignments.

Currently, the CMI Systems provides automated instructional management for the following academic curriculum areas:

- Basic Reading
- Graded Reading
- Math
- GED
- Writing/Thinking Skills
- World of Work

Vocational curricula will be the next area to come automated, while residential programs such as Social Skills Training, Student Orientation and Student Progress Evaluation will follow.

FY95 Actions for Accelerating the Use of Learning Technologies

During the past five years Job Corps has made a concerted effort to take advantage of advances in technology in the areas of student records, student pay and instructional management. Over the next two to five years the CMI System (described above) will become a component of a larger Job Corps Automated Data Processing (ADP) System. The new ADP system will facilitate interconnectivity between the existing Job Corps data systems, including the Student Pay and Allotment Management Information System (SPAMIS), and new systems, including a standard local MIS, a Scheduler, and other program components.

Job Corps has increased its overall budget for ADP from 1.4 million in FY 94 to 2.9 million dollars in FY95 in order to produce an extensive upgrade of its data center. This large increase in funding will result in a telecommunications network connecting critical Job Corps management and support functions via a central data facility. It will use the transmission of student specific enrollment, allowance, status, and termination data and other administrative communications.

Presently, centers use their own corporate or agency developed management information systems. However, with this expansion of the Job Corps Data Center DOL plans to develop and distribute a standard center MIS system. Plans are already drawn to expand and incorporate the Computer Managed Instruction system described earlier. Other program components slated for automation include student scheduling, counseling, behavior management and student progress and evaluation.

As a part of these planned FY95 measures, Job Corps stands poised to facilitate the inclusion of the DoD learning technology by:

- Accommodating learning technology into future software development,
- Reviewing DoD training materials for adoption into Job Corps curricula (if appropriate), and
- Including the potential use of Learning technology in all Job Corps classrooms, shops, dormitories, and offices as a part of all future procurement.

FY 95 funds have been set aside by Job Corps to pilot educational software packages in an Local Area Network environment. While several packages have been contemplated for review, DoD's Fundamental Skills Training (FST) stands out as an excellent package of materials. A preliminary examination of this material indicates that this "Intelligent Tutoring System" could serve as an excellent supplemental package for Job Corps' education program. The FST is an adaptive, computer-based training system that provides diagnostic, individualized instruction to students. The Department of Defense's Armstrong Laboratory developed this program to improve 9th grade critical thinking skills in mathematics, reading/writing and science. Its Word Problem Solving tutor focuses on teaching students to analyze word problems and write correct equations. In addition, its reading/writing and science programs help students and instructors analytically approach these areas. The programs use state-of-the-art color graphics and can be adapted to students performing at different competency levels. Job Corps plans to pilot these materials in FY 95, if arrangements can be made to obtain software support within its existing budget parameters.

Options for FY96 and Beyond

Job Corps is committed to creating a meaningful context for learning, rather than simply providing passive listening or watching abstract demonstrations. The application of interactive learning technology can establish an atmosphere where students become active

participants in a community of learning. Students can begin to learn new ways to communicate complex ideas and experiences, using the interactive learning tools required of them by the high performance workplaces of the future. The general education, technical training, and workplaces skills learning technology developed by DoD may have the potential to greatly enhance the interpersonal and teamwork skills, thinking skills and basic academic skills presently taught in the Job Corps Curricula.

Job Corps stands ready to more comprehensively meet its mission by employing maximum use of DoD learning technology. Such an application of these learning tools could be made over the course of the next five years in order to:

- Provide the Job Corps system with management tools for instructional design and course selection based upon job market trends;
- Integrate workplace, vocational, and education skills and allow centers to tailor a comprehensive training plan for each student;
- Integrate traditional and computer-based instruction in all training areas;
- More effectively monitor student progress by providing instructors, counselors, and residential advisors with real-time reports;
- Provide "learning on demand" for vocational students as they work on training projects;
- Allow students to access interactive training programs during evenings and weekends;
- Allow staff to access interactive training programs as a part of their in-service training and
- Offer students elective courses such as typing, personal finance, and foreign languages

While Job Corps is not prepared to modify existing DoD software for its use, it is prepared to establish three pilot centers equipped with trained staff to utilize a fully integrated training delivery system which would take full advantage of applicable DoD learning innovations. In order for a valid pilot to be conducted, \$1,250,000 from sources other than the Job Corps budget would be needed. The current Job Corps budget can not accommodate such a large project. If funds were made available, pilot centers would begin full operation in early 1996.

Potentially Applicable Learning Technologies

In addition to the general goals outlined in the previous section, Job Corps has identified a number of specific learning technologies programs which it feels have potential application to for its training programs. These programs could greatly enhance vocational

training program in two ways. First, particular programs have been identified which could serve to assist national policy makers in more effectively matching vocational training offerings with regional job market conditions. Second, the DoD has developed several programs designed to provide trainers with the capability to more economically and efficiently plan lessons and then author their own software. Below is a listing of specific programs which have been identified, a description of the program and the potential application it may have to the Job Corps program:

Fundamental Skills Training: Described in detail above.

Intelligent Computer-assisted Training Testbed: A program designed to provide a proof of concept and demonstration of how this can be achieved by developing, testing and demonstrating prototype software tool, called authoring shells in the field. ICATT could allow Job Corps instructors and curricula developers to economically author their own training software. At the very least, the program may allow the Job Corps training community to develop a comprehensive criterion referenced test bank which could be used throughout its system.

Virtual Environment Based Intelligent Tutoring System Authoring Tools: Software will allow instructional designers and subject matter experts with little or no computer experience to develop, deliver and maintain programs that use virtual environments to train students how to perform a variety of tasks. If proven cost effective, this technology could allow Job Corps centers in remote areas to offer training not available from either local institutions or employers. Such programs might also provide training on centers without the purchase of costly training equipment.

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IMPLEMENTATION PLAN

Goals 2000: Educate America Act White House Technology and Learning Challenge Draft 9/28/94

Note: this draft has not been reviewed by the Goals 2000 program office.

Purpose of the Program

The Goals 2000: Educate America Act is the administration's framework for education reform. It is designed to provide resources to states and communities to develop and implement comprehensive education reforms aimed at helping all students reach high academic and occupational skill standards. Key provisions include the statutory establishment of eight national education goals, national education reform leadership, support for state and local content standards and assessment standards used to measure educational progress, support for parental involvement in education, and the formation of the National Education Standards Improvement Council (NESIC) and the National Skill Standards Board. The legislation also creates an office of educational technology within the Department of Education with responsibility for providing national leadership in using technology to improve learning.

The Role of Technology in the Program

Statutory Provisions

- Title II of Goals 2000 creates an office of educational technology within the Department of Education. This office is charged with providing national leadership and with the development of a long-range plan for technology in education.
- Title III of Goals 2000 provides grants to states in FY 1994 to develop comprehensive education improvement plans. A minimum of \$75,000 is set aside for each state to ensure that the use of technology is integrated into this plan. Section 317 of the act defines the requirements of this technology component in detail. Once a state or territory's improvement plan has been approved by the Secretary, a state is eligible for more substantial grants for implementation. It is expected that in many states, a portion of federal implementation funding will support technology infrastructure and other technology components.
- Title III also requires states that receive technology planning funds to establish a technology panel with broad-based representation.

Applicable Technologies

Technologies relevant to Goals 2000 include computer hardware, electronic networks (especially

local area networks in schools and connections to the Internet for instructors and students), instructional software and other applications, distance learning programs, expanded use of telecommunications equipment such as modems and voicemail systems, video and video production equipment, and the development of digital libraries and file servers that provide distributed access to school and community information.

Implementation Plan

FY 1994 Planning Grants and FY 1995 Implementation Grants

- The Office of Educational Technology in the Department reviews each application for technology planning funds, and if necessary provides comments on the state's proposal. Over 30 state applications have already been reviewed.
- The Office of Educational Technology is providing assistance to states in developing the technology component of their Goals 2000 state improvement plans. A conference bringing state network directors, telecommunications regulators, and private sector representatives was held on September 23-25 in Austin, TX. Another conference is planned for March, 1995. In addition, a state technology planning guide will be distributed in late October. Assistance to individual states is being provided upon request.
- The states' education improvement plans will be submitted to the Department in spring, 1995. If approved, significant implementation funding will be available. The Office of Educational Technology will participate in the development of criteria for evaluating these state plans.

Challenge Grants and Other Demonstrations

- Information about exemplary technology projects will be disseminated by the Office of Educational Technology to state Goals 2000 technology panels.
- Information about the Challenge Grants will be disseminated via the Goals 2000 panels in each state or territory in early 1995.
- If a Challenge Grant project is evaluated and deemed successful, states will be encouraged to use it and other successful projects as models for education improvement.

Content and Assessment Standards

- The Office of Educational Technology will encourage national, state, and local standards development projects to integrate technology into these model standards.

*Outline for Action Plan**C. Jackson***The Role of Professional Development Within the Eisenhower Professional Development Program**

The target audience for the program includes teachers all content areas, with some emphasis on the mathematics and science content areas.

In light of the changes in ESEA Reauthorization, technology will be incorporated as a part of the State's plan submitted to the Department for funding under the Eisenhower Program. Even though a description of how technology will be used to enhance the professional development of teachers, and administrators and pupil services personnel, where appropriate, emphasis will be needed to reinforce its importance.

- 1) ACTION: New legislation outlines that States may use funds for developing or supporting professional development networks, either within a State or in a regional consortium of States, that provide a forum for interaction among teachers and that allow exchange of information on advances in content and pedagogy. This technology option needs to continuously be emphasized from the Federal level.
- 2) ACTION: Encourage States to use all Federal ^{now} sources for technology equipment and training, i.e., Chapter II funds for equipment and Eisenhower funds for training.
- 3) ACTION: Organize technology conferences (Pennsylvania model) at the State and local level which provide actual hands-on experiences for teachers and other administrators. This would reinforce the importance of using technology as an important resource for the teacher within the classroom.
- 4) ACTION: Encourage increased attendance of teachers and other administrators at professional organization conferences which promote use of technology within all content areas.

Currently, every State has various ways of addressing technology within the Program. The Program Office receives information from the States via annual performance reports of program operations, but not specifically in the area of technology. We also have frequent contact with State coordinators by telephone, in writing and during site visits which incorporates how technology is being used in various projects funded with Eisenhower funds.

Currently, in States with a strong focus on technology, students can utilize videodiscs, other software and networking capabilities to enhance knowledge in mathematics and science.

10-14-94 Learning Challenge Group 6 Tollgate Mtg

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Task Force on the Use of Technology in Federal Programs

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2. How can technology advance the mission (if technology can do it better, what does "better" look like)?

Technology can advance the mission of the Perkins Act by contributing to the development of high standards and quality outcomes for vocational education programs and by improving the delivery of services. In order to meet the challenges of a world economy characterized by rapidly advancing technology and increasingly high-performance work organization, the Perkins Act must prepare individuals for greater proficiency in a wider range of academic and occupational skills. The 1990 amendments to the Perkins Act contain key provisions which can be better implemented through the use of technology.

Vocational education programs are required by these provisions to emphasize high quality academic and occupational training. Technology can be instrumental in broadening vocational education programs through activities such as curriculum development and professional development, and upon the coordination of these programs with other education, training and workforce development initiatives.

Two critical areas which can benefit substantively from the use of technology, perhaps for professional development and in-service training activities include:

- integration of academic and vocational education through a coherent sequence of courses, to provide strong development and use of problem solving and basic and advanced academics such as mathematics, reading, writing, science and social studies, and
- providing students with strong understanding of and experience in all aspects of the

industry the students are preparing to enter, including planning, management, finance, technical and production skills, underlying principles of technology, labor, community, and health, safety and environment.

3. What is the target audience of the program? Are there particular target groups in regard to technology use?

The Carl D. Perkins Act is administered primarily through a Basic Grant program which funds States and localities with formula grants that are used to improve the quality of vocational education programs for all students.

In addition, the Perkins Act funds tech-prep education, tribally controlled postsecondary vocational institutions, state councils of vocational education, and national programs including demonstrations, research and data systems.

The Act also contains equity provisions to ensure that students who are members of "special populations" are provided full access to programs and the supplemental services they need to succeed. Members of "special populations" include low-income individuals, low-achieving individuals, individuals with disabilities, individuals of limited English proficiency, individuals in programs designed to eliminate sex bias, and individuals in correctional institutions. The use of technology in providing tutorial learning experiences for students with special needs is a potential application for the physically challenged. In economically isolated areas, distance learning, simulated work environments and other applications of technology may provide higher quality learning experiences for students.

Increased flexibility under ESEA, which includes substantial amounts for technology, can be used to link with activities under Perkins, such as equipment purchases for computer hardware and software. In these ways, technology may help provide a high quality vocational education for all students.

4. Is there research or evaluation of how technology is being used to address the goals of the program now?

We are not aware of any significant evaluation of the use of technology in vocational technical education. It should be noted that the American Vocational Association, in their September 1994 Journal, dedicated an issue to the impact of electronic technology on vocational-technical education. They also began the first of a series of articles featuring high tech hardware and software to teach the job skills students need to succeed in the workplace.

5. What types of technology applications are most relevant for this program area?

Having used rigidly designed, drill-and-practice programs of the past, many vocational teachers are skeptical of computer-assisted technology. Such programs involved little more than workbook lessons onto the screen.

Many of the technology applications that are useful in other disciplines are just as powerful,

when adapted, for vocational-technical education. For example:

- Personal Computers: Vocational-technical students need these to retrieve data and compose papers.
 - Electronic mail: Provides access to research databases and special periodicals as well as the possibility of working on projects with students across the world.
 - Interactive videodiscs: Can store and retrieve massive amounts of information in the form of video, sound, and text providing high quality lessons in diverse occupational areas.
 - Intelligent Tutoring Systems: Students can get unlimited practice on a variety of topics, from a medical technique to brake repair, and can move ahead to more complex materials when prepared. This tool is useful as an assessment technique.
 - Simulation Software: Design students through the use of software such as AutoCAD can create a drawing without ever touching a pencil. DOD has been a leader in the development of such software with applications in everything from construction technology to jet engine repair. The spinoff possibilities are legion.
 - Distance Learning Tools: Increases the possibility of equal access to a quality education for all students, especially in rural areas where resources are limited for certain programs.
6. What programmatic authority exists to implement technology in a way which advances the mission of this program?

Based on the 1990 amendments to Perkins and the broad framework provided by the School-to-Work Opportunities Act, technology has the potential to transform Perkins into radically broader program.

Several types of programmatic interventions are recommended, and technology can be used to significantly improve the content and delivery of all of these services. Specifically, the Act authorizes the following range of activities, among others:

- curriculum development
- equipment modification
- classroom modification
- instructional aids and devices
- guidance, counseling and career development activities and services and
- information concerning employment opportunities.

Technology can be instrumental in developing each of the above activities and in forging information and labor market information networks which link vocational education with the wider arena of education, training and employment programs and services in a State or locality,

as well as at the federal level in coordinating related initiatives.

7. What programmatic authority exists to implement technology in a way that advances the mission of the program?

Perkins funds would fall under the category of "funds that may be used for educational technology." The basic state grant and Tech-Prep Education funds are used for training using technology, but not necessarily through the use of technology.

Title IV of the Perkins Act contains provisions for the Secretary of Education to make grants to non-profit educational telecommunication entities to produce and distribute instruction material and services.

8. What program funds are now being used to support technology and related services and training?

Perkins funds within districts may be used for virtually any activity as long as the activity provides equitable participation to special populations and as long as the goal is to enhance vocational education in a school or program.

According to survey results, the most frequent use of Basic Grant funds for programs by school districts with individual grants were for purchase of materials (76% of districts for such things as computers, software, curricula for learning labs or other remedial programs) followed by investments in professional development to implement new programs.

In addition, a substantial number of funded Perkins demonstration projects carry out activities related to "computers" or "technology."

9. What specific action steps are needed?

The Administration is currently preparing a reauthorization proposal for the Perkins Act for submission in FY 96 and consideration as part of the FY 97 budget proposal. The reauthorization proposal can contain provisions which support the use of technology in providing high quality vocational education programs.

- *What is the purpose of the program?*

The purpose of the One-Stop Career Center System (OS) is to help integrate the delivery of career transition information and services into a "reemployment system." There are several paths being used to create this system: 1) implementation grants to states to create statewide systems, 2) planning and development grants to states for the same purpose, 3) grants to local systems to serve as learning labs, 4) grants to states to improve the quality of their labor market information (LMI) systems, and 5) research, development, and operations consortia of states to support the LMI initiatives.

Services to be integrated into the OS include at a minimum: JTPA Titles II and III (EDWAA), the Employment Service, and Unemployment Insurance. States are encouraged to integrate education (e.g., Carl Perkins, School-to-Work, community colleges) and social service programs (e.g., JOBS) into the OS.

The goal is to provide a seamless system of service delivery to job seekers and employers.

- *How can technology advance the mission?*

There will be four primary uses of visible technology: 1) linking service providers to reduce the need for redundant paperwork/applications, 2) delivery of career and labor market information and information on services, 3) as part of electronic labor exchange systems, and 4) as part of the training to be provided to some job changing or non-job-ready customers. There will also be uses of technology for program evaluation and data gathering which are likely to be invisible to most of the customers.

- *What is the target audience for the program? Are there particular target groups in regards to technology use?*

All persons in the labor force or who are seeking to get into the labor force.

- *What action steps are possible to increase the use of Technology in the OS program?*

- promote, encourage, and foster the use of learning technology in subsequent State and local solicitations for grant awards. We are in the process of evaluating the first round of grant proposals to states; many of those grants propose the use of technology in the four visible areas and in the invisible areas. Four to six states will receive implementation grants late this year. A second round, with 8-10 states is anticipated for award in mid-summer, 1995.
- promote research in, and use of technology through the state consortia and a national clearinghouse.

- promote use of technology in future grants by holding a technology fair in conjunction with future bidders conferences. Have the technology fair not just be exhibits but include formal learning tracks (like formal concurrent workshop tracks).
 - Focus technical assistance more heavily on the application of learning and other technologies. One mechanism would be for someone with experience and expertise in technology from other federal program (e.g., Defense, Energy, Commerce's NIST program) or a loaned Executive to join a combined School-to-Work/One Stop Team.
 - Have the local learning labs showcase technology.
- *Is there evidence (research, evaluation) of how technology is helping to address the goals of the program now?*

There is formal evidence of how technology may be helping address the goals of the One Stop; however, the heavy technology focus of many of the current state grants indicates a strong belief that technology is the wave of the future.

- *What types of technology applications are most relevant for this program area? (e.g. local area networks in schools, electronic mail, use of Internet resources, instructional software, distance learning, simulations, support for training, etc.)*

Learning technologies would be useful in many of the One-Stop centers which will offer basic skills training. Most of the job skills training is provided by third parties; they would need to be sold on the value of the learning technology separately.

MIS and case management technology will be critical to making the one stop systems work in most states. Most states will also depend on some form of remote access (e.g., voice response, dial-up modem, Internet, kiosks) to provide access to people who cannot reach the physical centers.

The One Stop System envisions substantial use of technology to provide customers with career and labor market information, much in a self access form. The System also envisions a substantial expansion of the electronic labor exchange function.

- *What is the current mechanism/policy for promoting technology in your program? (e.g. legislation and/or regulations permitting use of funds for technology, demonstrations, pilot projects, conference presentations, set-asides, etc.)*

Innovative use/application of technology is encouraged in the grant process. It is an allowable cost under the published Solicitations for Grant Applications. The state consortia will be developing specific applications and providing technical support to other states who are not part of a particular consortium. We are expanding the use of the Training Technology Resource Center (TTRC) within USDOL to serve as a national clearinghouse. We expect to bring grant recipients together for support and information sharing.

- *What policy issues does the use of technology raise for the program?*

In the case management and program evaluation areas, the use of technology raises some issues of privacy and confidentiality. Because much of the program evaluation work will begin to use UI wage records, there will be increasing issues of cross state usage of wage records.

- *What is the estimated amount of program funds used now for technology and related services and training?*

The amount of program funds being used now for technology and related services and training is unknown at this time. It is too early in the grant process to tell what percentage will be used. A quick review of the grants indicates a likely high use of technology for information sharing and case management; limited use of learning technologies.

- *If program funds are not being used to support technology-based learning, why is this the case? (e.g. state or local laws, rules governing credit for courses, lack of knowledge, fiscal restraints, etc.)*

Primary focus is system development. Choice of training methods (traditional versus technology) are locally made. One issue may be lack of awareness of technology; others may relate to rules governing credit for courses related to degrees or state certifications.

- *What forums for technology demonstrations or outreach are available? (e.g. conferences, regional meetings, technical assistance, publications, etc.)*

One-stop is likely to have at least two annual conferences where technology can be displayed and specific tracks can be formed to walk people through them. The key element of these conferences will be that they will bring together people with a new federal grant in their hands or people hoping to get a federal grant. Best to influence these decision makers early in the process.