THE TECHNOLOGY AND LEARNING CHALLENGE

The National Technology Learning Challenge is being designed to catalyze the development of a new generation of learning tools which can provide a lever to dramatically improve the way Americans learn -- in schools, workplaces, homes, in learning communities all across the country. At the direction of the President, the Vice-President and the Secretaries will issue this challenge to learning communities all across America. The purpose of the Challenge is to bring technological innovation to bear in implementing the National Education Goals, School-to-Work Opportunities, and the rest of the President's program of Lifelong Learning to continuously improve the learning, skills, competitiveness, and future prospects of all Americans. It is also the logical next step in the Vice President's national challenge to connect the nation's schools and libraries to the emerging information superhighway.

This paper outlines: the vision behind the Technology and Learning Challenge; options for the structure, operation, and financing of the Challenge; how the Challenge builds on the common interests and essential work of many parts of the Administration, and next steps in planning the Challenge.

Vision

While virtually all other sectors of our economy have been transformed by technological innovation and accompanying structural reorganization in the twentieth century, education and training in schools looks much like it has for generations. Three elements are now converging with the potential to create a revolution in the productivity of learning.

First, a new consensus is emerging about the dynamics of learning: The primary work of learning is done by the learner not the instructor. All students are different, they learn at their own pace, often in different styles. The work of learning is more engaging for the student if it involves active interaction and occurs in a meaningful context, rather than through passive listening or watching in the abstract. In this new perspective, the role of the teacher is no longer that of a talking head standing in front of a class of 25 students: the teacher becomes a coach of teams of learners, and students of all ages (including peers, parents, and easily accessible experts and tutors) are the active participants in a community of learning. Emerging technology makes it possible to achieve this new learning dynamic without a prohibitive investment in new materials or increases in instructional staff.

Second, technological advances in computers, multi-meida, data-storage, and communication are creating dramatic new ways to communicate complex ideas and experiences. The potential for creating a new generation of interactive learning tools is upon us. The technology can create computer-based learning environments that invite exploration and approximate the experience of working with individual tutors. We can realize this potential, however, only if we can bring the creators of the new technologies together with the

makers of essential learning content to transform games, information, and entertainment into engaging curricula for all ages, interests, needs and styles of learners.

Third, diverse means of transmission and telecommunication are being developed that will enable learners of all ages to connect with these learning tools -- and with other learners, experts, and tutors -- in schools, workplaces, and homes. Virtual learning communities can thereby be created between coaches, tutors, peers, parents and children, and learners of all ages to use these new learning tools at all hours of the night or day, on weekends, throughout the year. The extent of learning and the effectiveness of teaching no longer need be a prisoner of the amount of seat time in a classroom.

Hundreds of billions of dollars will be invested by American businesses and households in everything from advanced communication networks to high-performance televisions to take advantage of the dramatic new power of information technologies. The Technology and Learning Challenge will offer a small amount of federal research money to encourage communities making such investments to join with the creators of new learning tools and learning concepts. To stimulate the broadest possible interest and practical application, we will challenge the potential developers to apply in partnership with learning communities -- e.g.,schools, child care centers, and libraries with children and parents, teachers and experts; consortia of firms with workers; universities and colleges, public broadcasting and cable programmers with their students and users. Finally, to realize the full potential for leveraging a major jump in learning, we will challenge the applicants to design their learning tools to assist learning communities to meet or exceed the world class standards of Goals 2000, to engage in contextual learning in the School-to-Work Opportunities Act, and to continuously learn new skills throughout life in order to compete effectively in the emerging global economy.

Options for Structure, Operation and Financing of the Technology and Learning Challenge

The Challenge would be modeled roughly after the Administration's Enterprise Zone program. As in the case of the Enterprise Zone proposal, a large measure of the program's effectiveness is expected to be bringing together community members to work collectively on the proposals. In many cases the projects can be expected to go forward even if they do not receive awards. It would probably be best, however, to give a small number of major grants and a large number of small, largely symbolic, grants.

> Communities would be invited to propose concepts that would develop and introduce new, technology-based learning-productivity tools into their Communities. The program would not be designed to purchase communications equipment or other hardware for communities. This investment would be made primarily by private investors encouraged by a variety of state and federal programs. The Challenge program would be aimed exclusively at the development of new learning tools that can capture the promise of the new technology through compelling learning environments enriched by new connections between community members.

Criteria: The proposals would be judged on the following types of criteria:

- How effectively will the programs help the community achieve the goals set out in the Goals 2000 and School-to-Work Act?
- Do the proposals suggest unique strategies for using technology to increase learning productivity in any of a variety of possible settings
- Will the proposals encourage the use of innovative strategies in pedagogy, accelerate the introduction of learner-centered, experience-based learning environments, and result in a measurably improved learning.
- Can the learning tools produced be readily trasferred, replicated, or marketed to other national or international communities.
- Will the products of the proposal be widely available in the community?
- Does the proposal promise significant cost-sharing from the participants?

Eligibility: The definition of communities eligible for the grant would be broad. Communities could be geographic or they could be linked by a common interest or purpose (e.g. ~~handicapped groups~~ persons with disabilities, businesses with similar training requirements, physics or history

instructors). All proposal teams would, however, be expected to include the following members: schools, local businesses, communication firms, software developers (broadly defined), and content specialists (e.g. historians or scientists)

Management and Funding: A single agency would be designated to lead the process of crafting a program solicitation for the project but would be expected to work closely with a team drawn from contributing agencies. The total number of grants and the size of appropriate grants needs to be determined. Options for financing the project require careful review but include:

a. assembling resources for the challenge fund from agency budgets with relevant authority
b. requesting specific programmatic funding for a single agency
c. providing funding for winning proposals from several different federal programs each of which would review the project within its own jurisdiction. Winners might, for example, obtain CRADA support from DOE or NASA, school-to-work funding, and direct research support from an agency with funds appropriate for the purpose.

Separate strategies may be needed for starting the program with FY95 authority and for FY96 requests.

Relationship of the Technology and Learning Challenge to other Administration Work.

This challenge is designed to highlight the Administration's core strategies in education and lifelong learning and demonstrate how technology can advance these objectives through skillful management of federal programs. The use of technology to improve learning productivity has been selected as one of the themes identified by the President's Cabinet-level Council on Education, Training and Reemployment (ETR) chaired by the National Economic Council and the Domestic Policy Council.

The project also supports core administration themes in several other areas:

- The programs offered in support of this initiative will be clear examples of the Administration's success in "reinventing government". Instead of inventing new institutions or requesting major new programs, our initiatives will be crafted principally by making more efficient use of existing programs and focusing the expertise of many different agencies on common objectives.
- The programs support the Department of Defense's dual use programs. DoD can make more efficient use of its own research and training funds by coordinating its work with civilian agencies. The cost of future training products and services can be reduced and the quality improved by working with civilian agencies to foster creative, profitable education and training businesses serving both defense and civilian markets.
- By working closely with businesses and leveraging private research investment with public funds, the initiative supports the central themes of the Administration's technology program. Education and training technology is also one of the six areas of

emphasis identified in the Administration's technology program in February 1993. The priority has been reiterated repeatedly in policy guidance provided the agencies by OMB and the National Science and Technology Council (NSTC).

- Use of the emerging National Information Infrastructure to improve the quality of education has been one of the central themes of the President's National Information Infrastructure Task Force Chaired by the Secretary of Commerce.

The Tiger Teams

Three "tiger team" task forces have been asked to develop specific budget and programmatic recommendations that can be included as a part of the Administration's announcement on learning productivity. These decisions can be announced as a part of an integrated Administration program along with the Technology and Learning Challenge. Since the decisions span a range of programmatic and budgetary issues, the teams rely upon several existing White House coordinating groups.

1. **Procurement and Programs** This group, drawn directly from ETR members, focuses on how to take maximum advantage of the productivity gains possible in new learning technologies in (a) federal civilian and defense training programs, and (b) programs the Departments of Education and Labor designed to support education and lifelong learning. It aims both to increase the productivity of federal spending in these areas and to find ways to stimulate early markets for innovations in educational technology. The group will explore programs that can be undertaken within existing authority by individual agencies, interagency cooperative agreements (such as use of the DoC Manufacturing Extension Programs to deliver training advice and services), and the need for new legislative authority.

2. **Research and Development** The subcommittee of the NSTC Committee on Education and Training which is developing an interagency budget in technology for education and training is working to provide a clear set of recommendations about research and demonstrations that can accelerate development and use of advanced learning technologies. The group will identify the topics in areas like curiosity-based and learner-centered learning strategies, tools for designing synthetic environments, tools for collaborative learning, and new methods for testing and evaluation.

3. **Information Regulation** A group drawn from Information Infrastructure Task Force (IITF) activities will explore ways to ensure that programs meeting the core objectives of the IITF (ensuring competition, interoperability, and universal access) will also serve the unique interests of education and training. Proposals will include options for working with States and local jurisdictions to provide financing for infrastructure connections and universal access under new regulatory regimes.

Next Steps

Our goal is to have the following ready for a major administration announcement later year or early next year. A major kick-off event could be organized for the POTUS and VPOTUS (along with Secretaries Riley, Reich, Brown, Perry, and Shalala) to announce the challenge. Invitees could include a number of major players in the NII world (technology corporations, telecommunications operations), teachers unions, industry associations, major universities and community college systems, along with several community-based programs that are already utilizing the kinds of technologies that we are talking about. The elements of the announcement would include: (1) a powerful statement reiterating the central themes of the administrations ETR policies and explaining how new technologies will advance these key objectives; (2) a program announcement for the Technology and Learning Challenge and a clear plan for managing the program, and (3) a white paper presenting key budgetary and programmatic actions that will use many parts of the federal enterprise to accelerate the introduction of learning technology. The white paper would result directly from the work of the three tiger teams.

The steps needed to prepare for such an event are as follows:

July 7	The heads of the tiger teams meet to review drafts of the briefing they propose to give to a meeting of key administration officials planned for July 9.
July 9	DoD hosts a meeting for the ETR group to review the topics under review by the tiger teams and the Learning Challenge proposal and review a series of demonstration of learning productivity technology used in DoD. This meeting will result in approval of a schedule and a sense of priority in issues to be reviewed by each tiger team. Proposals for meetings with the Governors, businesses, and NGOs will be reviewed.
July 10- Sept. 15	A series of meeting and workshops with business, community, labor, education, professional associations, and other leaders
July 17-20	Important target of opportunity: National Governor's Association meets in Washington Gibbons talks on the 18th
July 20	Mid-course correction meeting for heads of the tiger teams to review each other's work
	A drafting team is named to begin work on the White Paper.
August 8	Decision memos completed by the tiger teams for review and approval by the ETR principals. These will include proposed Agency budgets for FY1996

DATE: July 5, 1994
TO: Carol Rasco
FROM: Mike Schmidt
RE: Our Meeting Tomorrow on Educational Technology

I have attached a draft of a proposal that is currently being discussed within the Education, Training, and Reemployment Working Group. It will be one of the discussion topics at this Saturday's ETR Seminar on Learning Productivity, and it is the main thing that I would like to brief you on tomorrow morning at 10:00 in our scheduled meeting. Please excuse the editing marks -- it is truly a work in progress and literally "hot off the presses!"

E X E C U T I V E O F F I C E O F T H E P R E S I D E N T

23-Jun-1994 09:20pm

TO: Michael T. Schmidt

FROM: Carol H. Rasco
Economic and Domestic Policy

CC: Patricia E. Romani

SUBJECT: RE: ETR Event on July 9

Thanks for the invitation. I am on hold for that day as I may have to go to Nashville, Tenn. that day in preparation for a conference the VP will host on family issues on Sunday and Monday. If I don't go to Nashville on Saturday I will plan to attend this conference. I hate to be indefinite and can't tell you when I will have an answer but Pat will have this on the calendar and when we know something we'll alert you. IN the meantime, Pat, please note I want to do a briefing with Mike on this and we'll look at it when we next do scheduling. Thanks.

Note: Mike Schmidt : Briefing

July 6 ⊂
Mike 30 min Brief
Re July 9 event

E X E C U T I V E O F F I C E O F T H E P R E S I D E N T

23-Jun-1994 05:37pm

TO: Carol H. Rasco

FROM: Michael T. Schmidt
Domestic Policy Council

CC: Patricia E. Romani

SUBJECT: ETR Event on July 9

Carol, I would like to formally invite you to the first official seminar of the Education, Training, and Reemployment (ETR) Working Group -- "The ETR Seminar on Improving the Productivity of Learning". It is the educational/training technology seminar that I have mentioned in staff meetings to you in the past, and it will take place on Saturday, July 9, from 9-12 AM at the Department of Defense's IDA Center in Virgina (it is actually pretty close to your house, and I will get you exact directions if you are able to attend). The learning productivity/learning technology issue is one that the ETR group has begun to focus on as one of its main charges. The seminar will be held for 25-40 top Administration officials in the Education/Training area, including Secretary Reich, Secretary Riley, Jack Gibbons (OSTP), and possibly the Vice President (not sure yet). No press will be at the seminar. I will get you some background information on the event this afternoon. It would be great if you could attend -- not only because I enjoy your company and because you are a one of the chairs of the ETR, but also because your co-chair Bob Rubin will be at the G-7 at this time and therefore will probably not be able to attend (although he has not been invited yet, I feel confident that the G-7 takes precident over this seminar, no matter how exciting it will be!). In addition, a new NII-Educational Technology initiative that Paul Dimond (NEC) Henry Kelly (OSTP) and I have been working on with the agencies may be proposed for high-level discussion at the meeting. I will get you a draft of that proposal ASAP (we are currently re-drafting it as we speak) and will also gladly brief you on it whenever you have a few moments. Thanks!

Carol,

JUN 23 REC'D

Here is the background info on the July 9 CTR seminar that I e-mailed you about. Please let me know when you have a few minutes -- I would love to brief you in more detail.

Mike

Pat

for potential meeting file.

THE ETR SEMINAR
ON IMPROVING THE PRODUCTIVITY OF LEARNING

The Education,, Training, and Reemployment (ETR) Policy Working Group's Seminar on Improving the Productivity of Learning will be an action-oriented, hands-on session that will explore the types of learning technologies developed by the Department of Defense that can be transferred to the civilian education and training sector. The intent is to begin to look together at programs and strategies for accelerating the development and adoption of technologies that can achieve a major leap in the productivity and fun of learning.

Mission Statement

The information technology that has been used so successfully to improve productivity throughout the economy has the potential to create a revolution in learning both by increasing what can be learned in a given amount of time and by increasing the time spent learning. Technology can make time spent in learning more productive by making learning more like an individual tutorial than a mass-experience, and by creating apprentice-like experiences where individuals and teams are free to explore, play, and make mistakes. Technology can increase the amount of time spent in learning throughout a person's career by making compelling learning environments accessible in homes, offices, schools, and libraries. For young people, technology, if used properly, has the potential to revolutionize the way in which children and adolescents spend their out-of-school time by allowing round-the-clock access to interactive learning software (games, information, instructional videos, etc.). This same technology will give adults the flexibility of learning whenever and wherever they choose, whether over a lunch-break or late at night after the children are asleep. Perhaps most importantly, by linking homes, schools, and offices together, technology can reestablish links between parents and schools and between learning and the practical work needed by a community.

The purpose of this seminar is to agree on a vision of what can be accomplished in this critical area that the President can bring to the American people, and a concept for how he might create a sense of national excitement and purpose around this vision. This will require us to launch work on a series of practical programs and policies that can ensure that the opportunity is captured. Expected outcomes will include, but are not limited to, the following:

- Ensuring that emerging technologies are used appropriately to meet the nation's commitments in education and workforce policy (Goals 2000, School-to-Work, the Reemployment Act, Income Contingent Loans, etc.);

- Ensuring the coordination of defense and civilian research on development aimed at using learning technologies for learning productivity;

- Ensuring universal access to the information superhighway that can connect homes, schools, and workplaces throughout the country to learning resources;

- Ensuring that education and training services aimed at military and civilian federal employees use the most efficient methods possible.

It is difficult to imagine an opportunity more critical to America's future. Efficient education and training is essential for a competitive economy, and it is critical for individuals to enjoy the benefits and avoid the perils of a prosperous, rapidly-changing economy.

The Department of Defense and Learning Technology

In the past half century, the Department of Defense (DoD) has invested substantial amounts of money, energy, time, and thought to improve the skills and readiness of the armed forces. This investment has involved both the training process and its applications to learners of different backgrounds and ability levels. Technology has been key to this process, and is becoming even more essential. DoD has thereby learned a great deal in this area about what works and what doesn't.

The investments that DoD has made in this area are many, and cover a number of areas, including:

- Active learning from a distance through interactive networks;
- Portable learning that is available to personnel in classrooms, workplaces, and homes;
- Simulation technology to replace expensive, environmentally harmful, and/or dangerous learning experiences;
- Embedded instructional sequences in operational equipment.

These investments have also helped DoD better understand what it does well in the areas of education and training. Key areas here include:

- Learning by doing;
- Team training/collaborative problem solving;
- Individualization and feedback with assessment built in;
- Career-long involvement -- truly lifelong learning

This DoD investment can now be leveraged to enhance the productivity of learning in other sectors of the economy. The seminar will concentrate on the types of learning technologies developed by DoD and their applications to civilian education and training. Other issues that have arisen -- such as lifelong learning in DoD, post-military employment history and military training contributions to the workforce, and employment opportunities for minorities and women -- could be presented as background material in this seminar.

Draft Agenda

A draft outline for the seminar has emerged based on meetings between the White House and key agencies participating in the event:

I. Introduction and Welcome -- DoD

II. Overview -- DoL

- Secretary Reich will give an overview of key workforce initiatives and opportunities for applying new technologies to improve learning productivity.

III. Overview -- DoEd

- Secretary Riley will give an overview of technology implications and issues involved in implementing Goals 2000.

IV. Overview -- DoC

- Secretary Brown will give an overview of business development issues in the education and training technology industry, and discuss ways in which, through regulations and incentives, the National Information Infrastructure (NII) could be used to provide universal access to businesses, schools, and homes.

V. Improving the Productivity of Learning -- DoD

- DoD will discuss their experience with leveraging technology for learning.

VI. Interactive Learning Technology Demonstrations -- DoD

VII. Action Plan For Improving Learning Productivity -- TBD

- Three interagency "tiger teams" have been established to develop plans of action in a number of related areas:

  Procurement and Programmatic Opportunities. This team will identify ways to use the federal procurement process to test and promote learning technologies and increase the productivity of Federal training programs. The Federal government spends huge sums on training. How might the types of technologies used by DoD be used to spend this money more effectively? The team will also identify programmatic opportunities (ie -- Goals 2000, School-to-Work, the Reemployment Act, Job Corps) to use DoD learning technologies to:

1) increase the efficiency of the programs, and; 2) speed the development and disbursement of this technology by using federal program funds to leverage the utilization of learning technologies.

Research and Development in Education and Training. This team will come up with a plan to focus, coordinate, and plan federal R&D spending in education and training. This effort will include defining and assessing current federal R&D efforts, and providing policy guidance about the federal investment in R&D to enhance teaching, learning, and training. The group will also look at ways to promote the widespread use of technology to enhance lifelong learning by coordinating federal efforts to support state and local use of advanced technologies, foster collaboration among federal agencies, coordinate the identification, promotion, and expanded demonstration of exemplary practices, and encourage the formation of public/private research and development consortia to develop new learning technologies.

The NII and Lifelong Learning. The National Information Infrastructure (NII) promises every business, hospital, home, library, and school in the nation access to a wide range of communications technologies, including voice, data, full-motion video, and multimedia applications. The impact of these capabilities on learning -- for children, higher education students, and adult learners could be substantial. If developed and implemented properly, the NII could be an ideal vehicle for improving the productivity of learning throughout America. This group will examine ways to ensure that the implementation and development of the NII will provide incentives for the continued development and disbursement of learning technology and ensure universal access.

VIII Creating a Vision for the Future

- the NII Community Learning Challenge proposal -- I will get you info on this.

To conclude the seminar, a discussion will be held on the creation of a message/challenge that the President could bring to the nation in a major public event. The message should probably include the following:

-- a reiteration of the Administration's commitment to ensuring that all Americans can benefit where growth and prosperity require constant change, and our competitiveness hinges on innovation and lifelong learning;

-- an explanation of how new technologies can support this mission by doing things no one thought possible;

-- a statement about how businesses, schools, and communities can work together to meet critical social objectives while creating large and

profitable business and employment opportunities in an area where America currently has a clear, worldwide competitive advantage;

-- an identification of specific programs and new initiatives that could be announced/introduced in a national event built around the vision -- this might include a "new communities" award which could be given to one or more teams of local governments, local businesses, schools, information technology providers, community colleges, and other groups which propose to develop and introduce learning technologies in ways that can demonstrate the potentials described in the vision; and a "new curriculum" award for major innovations in the use of technology aimed at achieving the Goals 2000 missions.