

THE WHITE HOUSE

WASHINGTON

October 25, 1995

MEMORANDUM FOR GENE SPERLING

FROM: Paul Dimond
Mike Schmidt

SUBJECT: Summary of October 23 Meeting on Potential DoD Actions on Educational Technology

On Monday, we met with Lou Finch and his colleagues from DOD to discuss potential actions that DOD could take to support the President and Vice President's Educational Technology Initiative. There was general agreement at this meeting that the proposal to transform the Department of Defense Dependant Schools (DODDS) into models for the nation's 21st Century Schools has a good chance of being approved by DOD, and we asked Lou to prepare a decision memo for the Principals on this issue by the end of this week. This memo will outline all of the politically sensitive issues surrounding this action. **However, in order to reach a final decision, you and Greg will have to sit down with the Deputy Secretary to indicate the importance the President and Vice President place on the Educational Technology issue, and our desire to see this DODDS Schools initiative be a part of our announcement of the National Public-Private Plan.** We can discuss this meeting with you in more detail after we get Lou's draft decision memo on the issue.

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SUBJECT: Summary of October 24 Meeting on Potential DoEd/HHS Actions
on Educational Technology

Yesterday afternoon, we met with Peter Edelman (HHS) and representatives from the Department of Education to identify the major issues/conflicts surrounding three possible federal actions:

Issue #1: Announce Second Round of the Technology Learning Challenge II and expand to Pre-School

There is agreement from both agencies that this is the right step to take for FY 1996. HHS has already been working with DoEd to make sure that the next round of TLC grants will include language on including pre-school children in any new grant proposal. We asked DoEd to come back to us by early next week with two documents in this area:

1. A recommended timeline for the TLC II rollout (now projected for announcement in January), complete with an alternative "Plan B" timeline for a December announcement;
2. A summary of the major themes of the TLC II grant application (how will we focus on pre-school children and still build off of existing application requirements).

We need to get as close to the President's FY96 \$50 million request for TLC II as possible or it will not be able to fund any new applicants in the FY96 appropriations battle: This must be a priority on the WH negotiation list. If we are left with something in the \$15-20 million range, as the current Labor/HHS appropriations seem to be heading, these funds will only go to funding year 2 of the 1995 first-round TLC grants and there will not be enough left to fund any significant number of new projects. (DoEd and HHS will cooperate with the current TLC winners who wish to add a pre-school component. With respect to FY97, the real decision is to use TLC authorizing provisions to stake up to 50 state TLC funds)

Issue #2: A Learning Lever for Every 5th Grade Student

DoEd has not done any significant thinking on this issue, and we have asked them to prepare a list of options, complete with pros and cons, by the end of next week. However, it seems that there are really only three routes to take on this:

1. If a Trust Fund is created, include this as a state condition of continued federal financing of the matching Education Trust Fund.;
2. Work Legislatively to create some kind of requirement that a portion of Title I funding be used to purchase such a learning lever for Title I eligible students, or;
3. Impose no new Title I requirement but work with Title I providers to encourage them to form technology purchasing consortia that could contract for and purchase such learning levers.

As you can imagine, Option #2 would create all sorts of problems -- not only would we be fighting a tradition of federal non-interference in the way local school districts spend Title I funds, but we would also be contradicting our own "ReGo II" efforts over the past year to roll back burdensome federal regulations. On the other hand, if the Option #1 trust fund is pursued, it may be funded under the TLC provision of ESEA anyway.

Issue #3: Learning Levers for Every Head Start student

HHS has a serious objection to this proposal, and it is our opinion that if we wanted to accomplish something in this area someone at a high level at the WH would have to go to the mat with Secretary Shalala. Peter Edelman has agreed to sit down privately with you and Paul to discuss this issue at greater length.

In their defense, HHS does have a strong, non-budgetary argument for why they oppose this provision: Unlike the discussion in Issue #2 of a learning lever for children at the 5th Grade level, at this time it is not clear to anyone in the public or private sector what the learning levers for preschool children might be, not to mention what is should accomplish. What is clear is that it is not the same lever we are talking about for 5th Graders and other K-12 students. Pre-school children have educational needs that are clearly distinct from K-12 students, and HHS argues that it is a waste of time and money to put the cart before the horse and make the decision to spend substantial federal dollars to purchase a learning lever before we have any idea what that lever would look like. Instead, HHS proposes their participation in the TLC II on this small scale before considering a more serious budgetary commitment.

In our opinion, in order to stimulate relevant commitments to develop pre-school learning levers, Peter's argument is correct.

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October 27, 1995

MEMORANDUM FOR GENE SPERLING

FROM: Mike Schmidt

SUBJECT: Thursday's Educational Technology Meeting on Possible Federal Actions: Agency Donation of Computers; Volunteering Time; and the Interagency Learning Technology Office

On Thursday, October 26, I met with members of our ed-tech team from OVP, OSTP, and the Department of Education to discuss three possible educational technology federal actions:

- Agency Donation of Computers to Schools
- Federal Employees Volunteering in Schools to Support Tech Corps Efforts
- The "Formal" Creation of the Interagency Learning Technology Office at the Department of Education

This memorandum will summarize the status of these three actions.

Agency Donation of Computers

As you know, President Bush signed an Order on this subject in November of 1992. However, this order is narrowly targeted at only science and technology agencies (mostly DoD, Energy, and NASA) and has not been very effective in getting high quality equipment into the schools. Moreover, it puts agencies in the position of being viewed as "dumping" obsolete equipment into the schools. The Vice President's Office has been working on a draft Executive Order that would enable all federal agencies to donate used equipment to a group of non-profit entities that take used computers and upgrade them to make them Internet-capable and ready for use in the classroom. This draft order would also expand this initiative to all agencies in government, not just science and technology agencies.

The Vice President's Office promised to have the draft order ready for review by next Thursday, November 2. The group in attendance at the meeting fully supported going forward with this Order.

Federal Volunteers to Support Tech Corps

According to existing Personnel laws and regulations, Federal Employees already have the ability to volunteer in schools and other non-profit entities on company time for a limited number of hours when approved by the agency head. So no Presidential Order is needed here. However, meeting participants felt that **we need to have some sort of Presidential**

Directive (a memorandum or letter to the heads of agencies) encouraging the heads of federal agencies to allow their employees to actively participate in Tech Corps and other related volunteer activities in their local schools to help schools integrate technology into the classroom. Meeting participants also felt that agencies will need some sort of active encouragement to have their employees participate in such a program -- perhaps some sort of Presidential or Vice Presidential recognition or award for the best agency program in this area (similar to the VP's Hammer Awards for Reinventing Government).

Draft language for this Directive is being prepared by OVP and should be ready by next week for our review.

Interagency Learning Technology Office (ILTO)

The ILTO issue is by far the most controversial issue of the three discussed in Thursday's meeting. All of the meeting participants agreed that there needs to be some role for coordinating Federal R&D in the area of educational technology, and that the ILTO structure already up and running informally at DoEd seems to be the right approach. However, there is some concern that we would be sending the wrong message by making this one of the "Federal Actions" that the President and Vice President hold up as a part of the public-private partnership when it is announced -- the fear is that it will look like we are endorsing the formation of a new bureaucratic structure, or a "typical big government solution" to this issue. The message that needs to get across, but would likely get lost here, is that this organization is needed to focus existing Federal R&D activity (which is scattered across many agencies) and act as a bridge to the private sector in this area.

A semi-consensus recommendation was reached by the meeting participants: **that we move ahead quietly with an Executive Order that formally creates the ILTO entity (needed for continuity and personnel reasons), but don't make this one of the actions the President and Vice President hold up as a part of their public-private partnership.** The message that the Federal Government is working to streamline and focus its activities in the area working with the private sector in the area of educational technology R&D may want to be used by the POTUS or VPOTUS without specifically referring to the ILTO.

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Draft outline
10/31/95

- I. Broad vision of PBS in the 21st Century
 - A. A leading provider, packager and clearinghouse of content for "public education," in the broadest sense
 - B. A leading provider of interactive learning materials for both classroom and home use
 - C. A leading provider of teacher training in two areas: (1) the uses of new technologies in the classroom, and (2) in new standards for all core curricula developed over the next decade in science, civics, the arts, etc.
 - D. A leading provider of distance and on-demand educational, training and school-to-work services for adults through degree-granting programs and through informal, continuing education services
- II. A leading provider, packager and clearinghouse of content for "public education," in the broadest sense
 - A. Multiple content sources
 - B. Source One: National programming, continuing in the PBS tradition
 - 1. Broadcast distribution
 - 2. Multimedia reversioning and distribution
 - 3. Online and real-time services
 - 4. Server-based, on-demand versions
 - C. Source Two: Content created for non-broadcast distribution
 - 1. Degree-granting adult education
 - 2. Skills-based adult education (i.e., not degree-granting, but school-to-work certifications or other formal learning programs)
 - D. Source Three: Other content providers under co-branded or cooperative distribution arrangements
 - 1. Schools, colleges, universities

2. Libraries
3. Trade associations
4. "Think tanks" and other scholarly groups

III. A leading provider of interactive learning materials for both classroom and home use

A. PBS Worldwide Classroom

1. Both formal and informal learning content
2. Highly customizable by others (e.g., the "California Classroom," the "Ohio Classroom," etc.)

B. Interactive versions (CD-ROM, groupware learning games, other online group experiences outside the Worldwide Classroom)

C. Published materials (in partnership with mass market and school publishing companies, among others)

D. Broadcast television

III. A leading provider of teacher training in two areas: (1) the uses of new technologies in the classroom, and (2) in new standards for all core curricula developed over the next decade in science, civics, the arts, etc.

A. New technology training

1. PBS has a history of "pulling" new technologies through the classroom: instructional television; PBS VIDEOindex programming with teacher guides, etc.; satellite-based learning systems through the Adult Learning Satellite Services; cellular technology, laptop computers, e-mail and online services through PBS MATHLINE
2. Current teacher training programs have a significant "technology-training" component (see below)

B. Standards training

1. PBS MATHLINE is the best example

2. MATHLINE will be expanded in the next 6-12 months to encompass all core curricula in the K-12 public education area
3. As described, these services inherently involve teacher training in new technologies
 - a. Teachers won't learn new technologies for the sake of the technology; they must see it as directly applicable, helpful and supportive of their classroom and teaching objectives
 - b. MATHLINE and related services provide precisely that incentive
 - c. MATHLINE service launched in 1994-1995 with 500 enrolled teachers in 16 states; service quadrupled in the second year to 2000 enrolled teachers in 36 states

IV. A leading provider of distance-based, on-demand educational, training and school-to-work services for adults through degree-granting programs and through informal, continuing education services

- A. Distance learning services will be curriculum -based (K-12) and degree-granting (GED, Associate's degrees, four-year college degrees) and distributed through broadcast, direct satellite, terrestrial and online technologies
- B. School to work services will focus on young adults needing additional, specific skills necessary to make the transition to the workplace, particularly in technology-intensive fields or careers requiring skills not generally taught in public schools or small colleges.
- C. On-demand services will focus on server-based, store-and-forward services in the "learning to the desktop" or "learning to the set-top" area—specialized areas ranging from business disciplines (human resources management and training, time management) to specialized workplace areas (high-performance manufacturing, etc.)

V. What It Will Cost, and Where the Money Will Come From

- A. Based on PBS's development experience with MATHLINE, the World Wide Web and the existing Adult Learning Service/Adult Learning Satellite Service, this initiative will require \$100 million to \$150 million per year over five years
- B. Funding ought to come through the sequestration of fixed percentages in the future auction of any additional spectrum, not merely broadcast spectrum and not exclusively public television's ATV spectrum; sequestration ought to occur until the "rechartering fund" reached a specified minimum level (e.g., \$2 billion to support a continuing annual investment of \$100 million while preserving principal)
- C. Funding also ought to come through earmarks in specific budgets from existing discretionary programs:
 - 1. Education: Teacher training and K-12 services
 - 2. Labor: School to work, distance learning and career training
 - 3. Defense: K-12 (to support extensions of new services to DoD schools and DoD families stationed both in the U.S. and abroad) and specialized career services/training
 - 4. NASA: Technology training and technology-related career programs
 - 5. NSF: Curriculum-based services in the hard sciences

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Educational Power of PBS

The PBS ---"The Preferred Brand in Education"

- PBS is the **most** frequently used television service by teachers, according to a recent survey conducted for Cable in the Classroom

PBS is the largest telecommunications-based educational provider in the nation

- More teachers use PBS programming in the classroom than any other television programs
- 30 million students are currently served by public television in 70,000 schools
- More than 5,000 high school students take public television-delivered distance learning courses

PBS offers the nation's largest telecommunications-based teacher professional development service -- -- PBS MATHLINE

****AT&T Foundation helped PBS launch Mathline with a major grant****

PBS MATHLINE's Middle School Math Project

- Includes video and online learning communities
- Now available in 34 states and DC
- 500 teachers participated in 1994-95
2000 teachers participating in 1995-96
- Teachers receive technical support from local stations
- Recognized as a model for teacher professional development by the White House, OTA, CED, FCC, United States Senate, and others

PBS MATHLINE's Elementary School Project

- Funded by the U.S. Department of Education
- Targeted to teachers in grades K-5
- Scheduled to launch in fall 1996

PBS MATHLINE's Mathematics Online Resource Center

- Yearly subscription service for teachers

- Training in use of online technologies
- Customized database searching for student activities, teaching strategies, assessment tasks, instructional resources, and research findings
- Array of collaborative learning communities, workshops, and seminars
- Virtual exhibit hall and conferences
- Prototyping in 1995-96; national piloting in 1996-97
- Launch in 1996-97 as component of broader resource center

PBS Teacher Online Resource Center

- Expansion of MORC into other disciplines: language arts, social studies, science, arts, other
- Piloting in 1995-96
- Launch in 1996-97



U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
THE SECRETARY

WASHINGTON, D.C. 20410-0001

October 6, 1995

Mr. Paul Diamond
Special Assistant to the President
for Economic Policy
National Economic Council
Room 233, OEOB
Washington, DC 20500

Mike Schmidt
→ please add
this to our
list for decision
Paul D

Dear Mr. Diamond:

I am pleased to invite you to a meeting in Washington, DC on Tuesday, October 24th to discuss and share information regarding the Department of Housing and Urban Development's "Campus of Learning" initiative.

The "Campus of Learning" initiative, announced in August 1995, is designed to transform public housing into safe and livable communities where families undertake educational opportunities, training in new technology and telecommunications, and partake in job training initiatives with local businesses. These opportunities will enable lower-income Americans living in public housing to become productive participants in America's marketplace of economic opportunity and telecommunications innovation.

I am eager to discuss ways that the Department can work with local government, housing authorities, schools and universities, and the private sector to implement the "Campus of Learning" initiative. The October 24th seminar will bring together representatives from approximately six cities to share concepts and strategies to implement the "Campus of Learning" initiative in their community. Each city will be asked to make a fifteen minute presentation outlining their "Campus of Learning" strategy. We believe that this meeting will be an important starting point to embark on the "Campus of Learning" initiative.

This daylong meeting will convene at 10AM at the American Institute of Architects at 1735 New York Avenue, NW. Please call (202) 708-1160 to let us know if you will be able to attend.

I look forward to seeing you on October 24th.

Sincerely,


Henry Cisneros

DRAFT

October 24, 1995

The Honorable Reed Hundt
Chairman
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Re: RM 8648, RM 8653

Dear Chairman Hundt:

This letter addresses the petitions for rulemaking filed before the Commission in May 1995 by the Wireless Information Networks Forum (WINForum) and Apple Computer Company, Inc.¹ Those petitions request the allocation of certain spectrum in the 5 GHz band and the adoption of service rules for shared nonlicensed personal radio network devices. Both the WINForum Shared Unlicensed Personal Radio Network (SUPERnet) devices and the Apple National Information Infrastructure (NII) Band devices would allow operation of nonlicensed, high-speed, wireless networks with multimedia capabilities. NTIA believes that these new wireless technologies have the potential to enhance education and other community services. Implementation of these networks and the feasibility of spectrum sharing between the proposed devices and Federal users should thus be fully explored by the Commission. We therefore recommend that the Commission proceed with a Notice of Proposed Rulemaking (NPRM) so that the policy and technical issues raised by the petitions may be addressed.

NTIA serves as the principal adviser to the President on telecommunications and information issues, including the Administration's NII and Global Information Infrastructure initiatives. In addition, as Federal spectrum manager, NTIA shares with the Commission jurisdiction over the frequency bands under discussion in the petitions. NTIA believes that the proposed WINForum and Apple devices could provide an important means of nonlicensed wireless access to the NII. Wireless networks can be more affordable than wired networks. Schools, hospitals, businesses, and others would thus have convenient access to communications networks with voice, video, data, and graphics capabilities without the expense and disruption that installing wired systems would require.

As you know, the President and Vice President have launched an important initiative to connect all of our classrooms, libraries, hospitals, and clinics to the NII by the year 2000. This initiative, which promotes expanded access to computers, teacher training, and the development of compelling educational applications, has the

¹ Wireless Information Networks Forum Petition for Rulemaking to Allocate the 5.1 - 5.35 GHz Band and Adopt Service Rules for a Shared Unlicensed Personal Radio Network (RM 8648); Apple Computer Company, Inc. Petition for Rulemaking to Allocate Spectrum in the 5 GHz Band to Establish a Wireless Component of the National Information Infrastructure (RM 8653).

potential to revolutionize our educational system, changing the way teachers teach and students learn. Students will be able to collaborate with their peers around the world, search digital libraries, use remote scientific instruments, and take "field trips" to on-line museums. As President Clinton said in a recent speech, "Every child in America deserves the chance to get the high-tech know-how to unlock the promises of the 21st Century."

For this reason, the Administration strongly supports spectrum policies that will promote affordable, high-bandwidth wireless computer networks. Wireless networks, and nonlicensed networks in particular, can be a cost-effective approach for the countless schools in our Nation that need connections to the NII to enhance learning opportunities and provide young Americans with the skills they will need in the future. Wireless networks may be an important option for schools because they often face limited budgets and are prevented from entering the Information Age by inadequate wiring. Furthermore, the proposed devices could allow more students to have network access directly at their desks in their classrooms instead of in computer labs in other rooms.

Other users will benefit from nonlicensed wireless networks as well. Small businesses that lack adequate wiring and that cannot afford access to wired networks could have affordable, convenient wireless access to multimedia networks. Such access could enhance productivity and efficiency. Health care providers would have the ability to transmit patient data, such as x-rays and MRI images, video recordings, medical charts, and other records, which would dramatically improve the efficiency of medical staff and ease the group diagnosis of medical cases. Moreover, NTIA believes nonlicensed wireless components of the NII will provide significant opportunities for innovators and small companies to make contributions to the overall mix of products and services available through the NII.²

NTIA looks forward to addressing a number of policy issues raised by the petitions that require further study. For example, petitioners seek some protection from interference for the wireless devices. Allocating spectrum to these new devices might thus foreclose certain other uses of the spectrum and require the Commission to weigh the public benefits of the proposed devices against those of competing spectrum uses. It may be possible for the Commission to establish a procedure that would guide it toward an economically efficient allocation. NTIA has no position on these issues at this time, but we encourage the Commission to raise these important issues in any Notice of Proposed Rulemaking it releases.

Because of our role as manager of radio spectrum used by Federal entities, NTIA is also particularly interested in technical issues raised by the petitions -- such as the amount of spectrum needed for the devices, the suitability of the bands

² See Letter to Reed Hundt, Chairman, Federal Communications Commission, from Larry Irving, Assistant Secretary of Commerce for Communications and Information, on ET Docket No. 94-32, ET Docket No. 94-124, and PR Docket No. 93-61 (Dec. 12, 1994).

3

proposed for operations, and whether sharing with other services is possible in those bands. Federal agencies such as the Department of Defense and the Federal Aviation Administration currently use spectrum in the bands under discussion. Given the scarcity of spectrum, NTIA believes that Federal entities should share spectrum with others when possible. NTIA has preliminarily reviewed Federal operations in these bands and determined that careful examination of sharing and compatibility should be conducted in most of the spectrum bands proposed for the new devices, with one important exception: to protect public safety, the 5.0-5.15 GHz band must remain fully available for air traffic control operations. We expect that the new devices could still be accommodated, however, because WINForum's petition involves only the upper portions of this band and Apple's petition involves spectrum adjacent to but not including this band. NTIA's preliminary review of existing and planned systems operating in the bands under discussion is enclosed with this letter.

Thank you for your consideration of these views.

Sincerely,

Larry Irving

Enclosure

cc: The Honorable James H. Quello
The Honorable Andrew C. Barrett
The Honorable Rachelle B. Chong
The Honorable Susan Ness

October 24, 1995

THE NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION**PRELIMINARY TECHNICAL REVIEW OF SPECTRUM MANAGEMENT ASPECTS OF WINFORUM AND APPLE NONLICENSED NETWORKING DEVICES PROPOSALS**

The Wireless Information Networks Forum (WINForum) and Apple Computer Company, Inc. petitions request allocation of certain spectrum in the 5 GHz band and adoption of service rules for shared nonlicensed personal radio network devices. The WINForum devices would operate in the 5.1-5.35 GHz bands on a shared nonlicensed basis, allowing short-range transmission of digital information at rates of approximately 20 million bits per second. Apple proposes to operate devices in the 5.15-5.30 GHz and 5.725-5.875 GHz bands on a nonlicensed basis and with some protection from interference. The Apple devices would provide not only short-range transmission of digital information at rates of approximately 24 million bits per second, but also medium-range transmissions (possibly up to 10 kilometers away).

As Federal spectrum manager, NTIA shares with the Commission responsibility for the frequency bands under discussion in the petitions and therefore has undertaken this preliminary review of those bands to determine the practicality of considering the bands for allocation for the proposed new devices. In sum, NTIA does not object to careful study of the bands petitioners seek to use to determine whether sharing with current and future users is possible, with one important exception: to protect public safety, the 5.0-5.15 GHz bands must remain fully available for air traffic control operations and sharing with the proposed networks in that band is thus not an option. As stated in our cover letter, we expect that the new devices could still be accommodated, however, because WINForum's petition involves only the upper portions of this band and Apple's petition involves spectrum adjacent to but not including this band. In addition, we question whether the medium-range transmissions proposed only by Apple are practical within the 5 GHz band, although we note that such transmissions may be appropriate in other bands.

5.0-5.25 GHz Band

NTIA believes that consideration of the 5.0-5.15 GHz band for the proposed devices is not feasible due to the need for these bands to remain fully available for air traffic control operations that protect public safety. NTIA does not object, however, to a careful examination of spectrum sharing of wireless devices with current and proposed users in the 5.15-5.25 GHz band.

The 5.0-5.25 GHz band is currently allocated to the aeronautical radionavigation service and was intended to be used principally in the United States and around the world for air traffic control, and specifically, aeronautical radionavigation systems such as the Microwave Landing System (MLS). The Federal Aviation Administration (FAA) has conducted extensive research and development for the MLS in the 5.0-5.15 GHz portion of the band and has plans for installation of 29

systems. The FAA stated in comments to the Commission that it opposes sharing this band with wireless data communication devices and it believes that wireless devices should not be protected from interference caused by aeronautical systems. As these systems are necessary to protect public safety, the 5.0-5.15 GHz band does not appear at this time to be an appropriate candidate for use by new devices. We expect that the new devices could still be accommodated, however, because WINForum's petition involves only the upper portions of this band and Apple's petition involves spectrum adjacent to but not including this band. We also note that the FAA is also considering the 5.15-5.25 portion of the band for future operations of Terminal Doppler Weather Radar (TDWR) and data link applications, including Automatic Dependent Surveillance (ADS), but details of these systems have not been defined and sharing may be possible in these parts of the band.

In addition, the United States will be proposing at the next World Radiocommunication Conference (WRC-95) that a part of the 5.0-5.25 GHz band be reallocated for Mobile Satellite Service (MSS) feederlink (Earth-to-space) operations. In comments to the Commission, MSS licensees Globalstar and Constellation stated that the petitioners fail to offer convincing technical studies to demonstrate that their network devices are compatible with MSS feederlinks that will operate in the 5 GHz band. They also stated that the lack of specific technical parameters for the petitioners' network devices does not allow an adequate review of available bands most suited for high-speed wireless data devices. Assuming the Commission considers these views, NTIA does not object to a careful examination of whether spectrum sharing of wireless devices with current and proposed users in the 5.15-5.25 GHz band is possible.

NTIA also notes that many European countries have allocated parts of the 5.15-5.25 GHz bands for High Performance Radio Local Area Networks (HIPERLANs), which are proposed wireless devices that would operate in a manner similar to the WINForum and Apple devices. Allowing the petitioners' devices to operate in these bands in the United States would allow for the possibility that the devices could be used on both continents. This would be convenient for users and bolster marketing opportunities for manufacturers, making these bands attractive candidates for use by the petitioners' devices.

Some HIPERLANs studies have been conducted that indicate some sharing with current users in these bands may be possible. Thus, if systems similar to HIPERLANs are developed in the United States, sharing may be possible here as well. Results of HIPERLANs versus MSS feederlinks studies contained in the WRC-95 Conference Preparatory Meeting (CPM) Report show that for electromagnetic compatibility, MSS feederlink uplink earth stations require up to a 50 kilometer separation distance from outdoor HIPERLANs nodes and up to a 10 kilometer separation from indoor nodes. European studies of MLS versus HIPERLANs compatibility indicate that HIPERLANs can operate in channels adjacent to those used by MLS. NTIA is not aware, however, of any co-channel MLS versus HIPERLANs compatibility studies.

Further studies must be conducted to determine whether the petitioners' devices could share the spectrum they propose to use.

5.25-5.35 GHz Band

NTIA does not object to a careful examination of spectrum sharing of wireless devices with current and proposed users in the 5.25-5.35 GHz band.

The 5.25-5.35 GHz band is allocated to the Government radiolocation service (which includes radars used by the Defense Department to track missiles and radars used by the FAA to track aircraft) on a primary basis and to non-Government radiolocation (such as radio surveying devices) on a secondary basis. NTIA believes that, due to the high power and siting constraints of Government radiolocation systems, it may be difficult for wireless devices to share spectrum in proximity with such Government systems in the 5.25-5.35 GHz band. Several alternatives for precluding mutual interference between Government radiolocation systems and wireless devices are possible. Quiet zones could be established around key radiolocation locations within which wireless devices would not be able to operate. If that proves too restrictive, it might be feasible for wireless devices to be designed with robust modulation schemes that would be resistant to radar generated pulsed-type interference. These types of modulation schemes may also reduce the spectrum requirements for wireless devices.

Furthermore, within the 5.25-5.35 GHz band, footnote 713 allows radiolocation devices onboard spacecraft to operate on a secondary basis for the purpose of earth exploration-satellite and space research services. An International Telecommunication Union Radiocommunication Sector (ITU-R) study group has been established to investigate the consequences of upgrading the earth-exploration satellite and space research services to primary status within this band. Issues concerning the upgrading of these services to a primary status may be addressed at future WRC conferences (i.e., WRC-97).

5.725-5.875 GHz Band

NTIA does not object to a careful examination of spectrum sharing of wireless devices with current and proposed users in the 5.725-5.875 GHz band.

The 5.725-5.850 GHz band is currently allocated to the Government radiolocation service on a primary basis and to amateurs on a secondary basis. In addition, the 5.725-5.875 GHz band has been designated for use by Industrial, Scientific, and Medical (ISM) devices. ISM devices, however, are not operated extensively in this band at this time.

The 5.850-5.875 GHz band is presently allocated to the Government

radiolocation service and to the non-Government fixed satellite service (Earth-to-space) on a co-primary basis, with a secondary allocation to amateurs. In addition, this band is used for controlling target vehicles during air defense and air combat training. NTIA has recently proposed through the Interdepartment Radio Advisory Committee (IRAC) that the Government radiolocation service be replaced by a shared Government/ non-Government allocation to the fixed satellite service (Earth-to-space). In a report sent to NTIA in response to its 1994 Preliminary Spectrum Reallocation Report, the Commission suggested that the 5.850-5.925 GHz band be allocated solely to the non-Government fixed satellite service. In addition, legislation concerning the reallocation of this band for non-Government use is pending in Congress.

The American Radio Relay League and individual amateur radio operators filed comments with the Commission regarding their concern that a proliferation of wireless devices would negatively affect amateur operations in the 5.8 GHz band. Amateur activity in the bands around 5.8 GHz is relatively light due to the high costs of the associated equipment. As congestion increases in lower frequency bands allocated to the amateurs, however, the use of the bands around 5.8 GHz by amateurs is expected to increase.

When making any new allocations, NTIA believes the Commission should take into consideration the current and planned uses of the 5.725-5.875 GHz bands by ISM, radiolocation, satellite, and amateur services.

Apple's Medium-Range Communications Proposal

Some commenters on the petitions have questioned the practicality and spectrum efficiency of the Apple devices using the 5 GHz band for medium-range point-to-point communications -- i.e., networking that would extend not only within a short range, such as within a building, but also to distances as far as 10 to 15 kilometers away -- and have recommended that other bands above 10 GHz be considered before a commitment is made to a frequency band for wireless devices. NTIA believes that such operations may be impractical within the 5 GHz band. To transmit data over 10 kilometer distances at high speed requires a high power level that would not allow spectrum sharing among multiple users, including incumbent Federal users. Such operations may be better suited for other spectrum bands.

ADMINISTRATION FOR CHILDREN AND FAMILIES

Options Paper for

THE EDUCATIONAL TECHNOLOGY WORKING GROUP

September 20, 1995

INTRODUCTION

We are excited at the opportunity for an initiative to harness educational technology on behalf of low-income preschoolers, their families, and their communities. To ensure that the initiative truly pays off for these young children, we propose that it:

- o Build on the history of partnerships in support of technology that Head Start has funded and participated in, as well as the expertise that now exists in early childhood and learning technologies;
- o Exemplify key principles of excellence in early childhood education, such as individualized rather than canned experiences, inclusion for all children, and parental involvement; and
- o Complement other critical elements of the President's Head Start, child care, and early childhood agenda, such as quality, increased enrollment, and support of working parents through full-day, full-year services.

In order to select one or more approaches that meet these criteria, we believe that an initial phase of consultation with key experts is essential. This consultation phase could be built into the President's announcement, as a defining feature of the Administration's partnership approach to this exciting innovation.

KEY PRINCIPLES

The Head Start program has been involved in a variety of partnerships to support the use of technology in early childhood and family learning, both through innovations undertaken by

individual grantees in their communities and through national demonstration projects. Key examples include:

- o The use of computers in many preschool classrooms;
- o The use of computers for adult education and GED preparation;
- o Demonstration projects on the effective use of technology when adapted for children with disabilities; and
- o An extensive and sophisticated interactive, satellite distance learning effort which includes 39 states, 22 American Indian tribes, service to the Virgin Islands, Puerto Rico, and most of the island programs of the Outer Pacific.

Based on these experiences and other work by early childhood experts, we have identified the following principles which should guide the new technology initiative:

1. **To ensure that the new initiative builds on the extensive research and practice knowledge about what works for young children -- which can be very different from what works for older children -- it is critical to include experts in the growth, development, and learning of young children from the beginning of the initiative.** As noted above, we would begin with a thorough but short consultation phase that would bring together early childhood experts and experts in the potential technologies. We would ensure the continued involvement of early childhood experts throughout the development and implementation of the technology project.
2. **Integrated into the application of the technology, there must be a substantive, involved role for parents and other significant adults in the children's lives.** The central role of parental involvement in children's learning is both a finding of the early childhood research literature and a basic principle of Head Start. Educational technology offers key opportunities to support this role, through activities that parent and child undertake together.
3. **The technology must exemplify one of the most important lessons about young children's learning: that tools to support learning must be individualized and respond to the particular pattern of development unique to a particular**

child. The experience of Head Start programs suggests that the best uses of technology exemplify this principle of individualized learning (which is part of the Head Start Performance Standards, the basic quality standards that programs must meet) by allowing different children to use them in many different ways. Limitations of content in scope or sequence that would lead to a "canned" approach are not consistent with what we know about quality early childhood education and truly making a difference to young children's learning.

4. **The technology initiative should also exemplify inclusion of children of different cultures, languages, races, and ethnicities, as well as children with disabilities.** This is a central principle of Head Start, and, once again, new learning technologies offer new opportunities for achieving this principle and offering new learning experiences to all children.
5. **The initiative needs to complement the other critical elements of the President's agenda for Head Start, child care, and early childhood education. It would fit naturally as part of Head Start's traditional national laboratory role: Head Start as an incubator of ideas and a catalyst for change.** The key elements of the President's agenda for Head Start, as reflected in the 1994 Head Start reauthorization bill, include ensuring quality for all children; expanding enrollment in ways that are responsive to the changing needs of families; reaching very young children with an Early Head Start, before they are old enough for traditional Head Start programs; and supporting families where parents work or are in training through expanded full-day, full-year programs. Given the extremely tight budget constraints, which potentially endanger key elements of this agenda, an approach which tried to reach all children in Head Start would be prohibitively expensive. However, a demonstration approach would allow us to take full advantage of Head Start's historic role as a catalyst, able to prompt change that spreads to many more young children than those directly served.

FUNDING

Funding options for a demonstration project in technology for early childhood learning need additional discussion, in the light

of the FY '96 appropriations process. Both the House and Senate appropriations would cut Head Start resources by more than \$130 million from the FY '95 level. The Administration has estimated that the House appropriation could require a reduction of up to 48,000 children and families from 1995 to 1996, if grantees maintain current levels of quality.

On the other hand, the President's FY '96 budget request proposes an increase of \$400 million over FY '95. At this level, it would be possible to enhance quality, increase enrollment, expand full-day/full-year services, and make an investment in developing and implementing new technologies on a demonstration basis.

We look forward to discussing a range of options in regard to this investment.

OVERALL APPROACH

Because of the success and appeal of the Technology Learning Challenge grant program begun by the Department of Education in FY 95, we propose the following overall approach to the initiative:

- o First, after the consultation process described above, the next step will be to issue an announcement with multiple awards.
- o Second, the overall model could build upon the idea of local consortia including partners from the Head Start and child care communities along with other public and private sector partners. This model could enhance and extend our resources and our impact by framing the awards as "technology matching grants" with a grantee contributing 20-25% in-kind and a corporate partner contributing 25-30% in matching resources.
- o Third, this piloting methodology would be in keeping with many other activities which are now part of the Head Start and child care delivery system, but which began as demonstrations or discretionary projects. Further, the piloting mode would assure that evaluation of both the technology and the utilization of the technology can be completed and can drive subsequent implementation, expansion or redesign.

HEAD START TECHNOLOGY PROJECT APPROACH

We can envision a range of projects which would create ways for Head Start children and other preschool children to increase in-home learning time and would increase parent involvement in their children's learning and education. During the consultation phase, a variety of technologies would be reviewed, and perhaps more than one could be placed in Head Start Centers and child care settings for utilization and evaluation.

GOAL: To challenge, as many as possible, organizational partnerships of Head Start, parents, research institutions, and corporate or technological team members to come with "designs" and applications for utilization in Head Start programs.

Examples of technologies and strategies which might be proposed by local consortia could include, but would not be limited to the following:

The creation of "technology learning kits" to increase in-home learning time and to increase parent involvement in their children's learning and education. This might include video-game type hardware and/or software, laser disc technology or laser light pens with a series of interactive books and learning cards.

The establishment of model "technology villages" where Head Start programs serve as community "on ramps" to the information highway for children, parents, staff, utilizing/incorporating existing community technologies and other resources.

The installation and use of the new, smaller versions of home satellite (PSAT) technology to "link" every Head Start household into GED classes, second language classes, job-line information, observations of their children during Head Start activities, and parenting education, for example.

CONCLUSION

We are excited by the opportunity to explore further the enhanced use of technology by low-income children and families through the Head Start program. The overall approach we recommend is a

demonstration project, informed by a process of consultation with experts in technology and early childhood, and encompassing the the exploration of several different types of technology and models of implementation. Such an approach allows the greatest flexibility in designing and implementing the technology initiative and offers an opportunity for partnerships both within the Federal government -- education, child care, labor, health and human services -- and outside of government through corporate and business partnerships. Further, this approach builds upon what has been learned by Head Start through previous technology efforts and challenges the field to move forward in designing new technology that is responsive to the learning styles and developmental needs of young children. We look forward to discussing this initiative further.

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EDUCATIONAL TECHNOLOGY INITIATIVE ISSUES AND COST ANALYSIS

Issue #1: What should we call the schools that meet all four components of our initiative?
(The symbol [x] is used to designate this term in the rest of the text)

1. high-technology/ high-tech schools
2. information age schools
3. high-performance schools
4. 21st Century Schools
5. interactive schools
6. TLC (Technology Learning Challenge) schools

Issue # 2: What is the Bumper sticker goal?

1. 50,000 [x] schools by the turn of the century.
2. 100,000 [x] schools in seven years
3. all schools are [x] schools in seven years
4. all classrooms [x] classrooms in seven years

Relevant Facts:

- 109 thousand schools
- 95 thousand public schools

Issue #3: How are the four components that qualify a school as a [x] school defined?

1. **connections:**
 - *all classrooms connected to the internet*
 - all classrooms connected to the information superhighway
 - all classrooms connected to high-speed, switched communications
 - all school computers connected to the information superhighway
2. **computers:**
 - *one modern computer for every 3 students*
 - one modern computer for every 5 students
 - *one learning lever for every student [a learning lever is a modern computer or a powerful, interactive game machine capable of supporting learning software]*

3. teacher training

- *all teachers trained to use new learning tools in their teaching*
- schools become high-performance work places
- all new teachers trained to make use of new learning tools in their teaching

4. content:

- *All students using interactive learning tools*
- Modern educational software should be as engaging as video games and as inspiring as learning with an expert tutor. It should support a curriculum based on exploration and discovery and be customized to the needs and tastes of individual students. Competitive products should be available for every learning level from K-12 and every major subject. Options:
 - a) schools spend 1-2 percent of their budgets on modern software by the year 2000
 - b) one dollar is spent for modern educational software for every three dollars spent on hardware
 - c) school markets for modern educational software per dollar of school budget as large as software markets for equivalent businesses in banking and insurance per dollar of sales

Issue # 4: What should be promised “Within a Year....”?

1. connections:

- *double the number of schools connected to the internet*
- two thirds of all schools connected to the internet
- sixty thousand schools connected to the internet

2. computers:

- *double the number of modern computers in schools*
- one modern computer for every teacher
- one modern computer for every classroom

3. Training:

- *double the number of teachers trained to use computers and the internet*
- half a million teachers trained to use the internet

BACKGROUND

CONNECTIONS

Basic Facts:

- The Department of Education is conducting regular annual surveys of school connections that provide a benchmark and a way to measure progress.
- Currently 35% of schools and 3% of classrooms are connected.
- There are approximately 100,000 schools and 2.3 million classrooms (assuming one classroom per teacher) in primary and secondary schools.
- Connecting 2.2 million classrooms would cost \$4-5 billion and \$500 million/year for operations.

Why the goals are credible:

- At current installation rates, it is likely that the number of schools connected will reach 70% by this time next year. This is the "by next year" goal.
- Snowe-Rockefeller amendment to telecom bill and the universal service fund would make connections affordable to all schools and libraries [valued at \$1-2 billion].
- New spectrum greatly reduces cost of connections for rural schools and schools where internal wiring is expensive because of asbestos or other problems.
- "Barn raising" program will connect a quarter of the classrooms in California (2000 schools) in a single year.
- Cable company commitments to connect schools in lieu of settlements.
- Tech Corps volunteer programs in all 50 states offering help in installations and maintenance.
- Electronic Village initiatives.
- In-school wiring is more expensive and will require a major commitment of funds from a combination of voluntary actions, school funding, and federal program efforts. Meeting the long-term goal will require the kinds of financial commitments shown in Table A.

COMPUTERS

Basic Facts:

- While the number of students per computer in schools has decreased from 125:1 in 1983 to 12:1 in 1995, many of these computers are now outdated. Less than a quarter of computers currently in schools are capable of running modern software, which means that today there is only one computer capable of connecting to the Internet for every 48 students (averaged nationally). Schools must plan for and fund upgrades on a continuing basis (just as businesses do).
- Students, particularly children from middle and upper income households, are much more likely to use a computer at home than at school. A third of all U.S. households have computers. Eleven percent of elementary students and 21 % of secondary students report using computers for homework.
- There is one computer for every 12 students in K-12 but only one *modern computer* for every 48 students. By one *modern computer* we mean a computer that could actually run software available for home use in today's computer stores (286 or better PCs or MACs).
- The inventory of computers in schools that could operate state-of-the-art consumer software (e.g. Windows 95, CD-ROM with speakers, fast graphics board, etc.) is unknown but obviously the ratio of students to the number of such computers is well above 48.
- A good *modern computer* now costs about \$1500-2000, added equipment can double the price.
- A new generation of extremely powerful (64 bit), mass-produced machines specialized for 3-D games will shortly be entering the market for \$300-500. These devices will use joy-sticks, game cartridges and CD-ROM drives. They will not have keyboards, disk drives, or a mouse. They will also require a TV-set to display images. A game machine with a screen would cost \$500-700; peripherals to permit text or other entry would add several hundred dollars.
- Doubling the number of modern computers means increasing the number from about 1 million to 2 million and will cost \$1.5 billion. Reaching all teachers (or all classrooms) would mean going from 1 to 2.6 billion at a cost of \$2.4 billion.
- Providing one modern computer for every 3 students would cost a total of \$15-30 billion (\$22.5 billion at \$1500/computer). This means spending at an average rate of \$3-5 billion/year (\$4.5 billion/year for \$1500 computers).

Why the goals are credible:

- The number of computers in school is increasing at the rate of approximately [?]
- Federal and private contributions of modern computers to school will be at the rate [?]
- Over the longer-term, state and federal contributions for computers can average \$4-5 billion/year given the 5% funding commitment [see Table A].

TEACHER TRAINING

Basic Facts:

- There are 2.6 million K-12 teachers, of whom only about 200,000 are estimated to have any significant training in use of technology in the classroom.
- Estimates of the cost of training vary widely. A minimum level is probably about \$2000/teacher or \$400 per teacher per year. Several times this amount may be needed.
- Training all teachers at \$2000-\$4000 each would cost \$5-10 billion or \$1-2 billion/year over five years.

Why the goals are credible:

- Teacher certification/standards?
- Training 200,000 teachers during the next year will require \$300 million. Assuming \$2000/teacher, this would could be accomplished using about 20% of the Eisenhower training funds requested (yielding \$150 million) with the remaining \$250 million from state matching funds.
- Teachernet.
- Long range goals require major financial commitments [Table A].

CONTENT

Basic Facts:

- Most purchasers of personal computers buy about \$400 in software when they buy a \$1500 computer.
- Education software is still seen as a small niche-market by software publishers in spite of the fact that education is the biggest information-based industry in the U.S. -- spending on K-12 education is ten times larger than long distance telecommunications revenues and ten times the annual receipts of the motion picture industry.
- Sales of education software to homes is approximately the same as sales to schools.
- Much existing educational software does not exploit the interactive, exploration-based learning that computers are uniquely qualified to provide but are instead simple translations of books to screens or provide rote drilling.
- Only 30% of the software in schools is actually used to provide instruction in core curricula, the rest is used to teach keyboarding, word processing, or other business skills.

Why the goals are credible:

- School purchasing consortia.
- Challenge grant development projects reach [?] schools with high quality software products.
- Expand challenge grant to pre-school.
- Federal research and development (including DoD).
- Federal digital information products.

COSTS

Table A
Annual Cost of Educational Technology
to Make All Public Schools [21st Century] Schools

	Total Cost (\$ billions)	Average cost/year over 5 years (\$ billions)¹	Percent of school budget
Connections ²	2-8	0.4-1.6	0.2-0.6
Computers ³	20-25	4-5	1.5-2.0
Software ⁴	5-20	1-4	0.8-1.6
Training ⁵	5-10	1-2	0.4-0.8
New Tech Support ⁶	5-15	1-3	0.4-1.2
Total	37-78	8-18	3-6

Table B
Possible Sources of Funding for Educational Technology
(Totals to 5% of Annual School Expenditures)

	Billions of dollars/year
Federal	2
Direct School Contributions (see Table C)	8
Private Contributions (funds and in-kind)	2
Total	12

¹ Spending would ramp up from 1995 levels.

² RAND/ McKinsey estimate. McKinsey estimates a 16% rate of increase per year.

³ One computer for every three students is \$22.5 billion assuming \$1500/computer

⁴ Low range is \$400 in software for every computer, high range is estimate of cost of developing high-quality software that could be used for 1/3 of student time.

⁵ Low end is \$2000/teacher, high end \$4,000/teacher

⁶ Equipment maintenance, repair, user assistance, and other functions. Early experiments reported by RAND used very high levels of on-site support -- the equivalent of \$5 billion/year. It is assumed that some part of this will be performed by existing school staff who have been trained..

Table C
Current School Spending Distribution

	\$ Billions	\$/student	% school budget
Possible Resources for Technology Funding			
Curriculum development, staff training, libraries, and media and computers	8.8	206	3.7
Instructional supplies	4.6	108	1.9
New Capital	20.7	485	8.6
Subtotal	34.1	799	14.2
 Total School Budget	 250.0	 5,644	 100.0
 Federal funding	 16.0	 375	 6.6

Table D
Current U.S. Public School System

Number of Students (fall 1995)

Elementary	32.2 million
Secondary	12.7 million
Total	45.0 million

Numbers of Teachers (fall 1995)

Elementary	1.1 million
Secondary	1.5 million
Total	2.6 million

Number of Schools (fall 1992)

Elementary	84.5 thousand
Secondary	10.6 thousand
Total	95.1 thousand

DRAFT

September 12, 1995

MEMORANDUM FOR

FROM:

PD

Clinton Reform
agenda

SUBJECT:

OPTIONS FOR TECHNOLOGICAL LITERACY TRUST FUND

Introduction. At the President's request, representatives of the NII and NEC- DPC Education Working Groups have been meeting jointly for the past six weeks to develop a proposal for making educational technology a defining issue for the nation -- now, through the State of the Union Address, the 1996 Campaign and the Second Clinton-Gore Term. Our review has surfaced at least one major budget, policy and political issue that requires your immediate attention: as a part of a major public-private campaign to bring the information technology revolution to all students, should the President propose some form of a Technological Literacy Trust Fund?

Background. As depicted in Diagram 1, the ultimate goal of such a Presidential initiative is to equip all American children with the skills they need to thrive in the knowledge intensive, information age that is sweeping the global economy at the dawn of a new century. In order to do so, by the year 2000 all pre-school, elementary, middle and high school students must have the opportunity and technological literacy necessary to use computers and associated technology to enrich their education and learn the skills essential to thriving in the 21st century. We believe this goal can be reached if the President can lead an on-going grass-roots, public-private campaign to use emerging educational technology to achieve four intermediate objectives: (1) make modern computers an integral part of every classroom; (2) connect these computers so they provide a pathway to our emerging National Information Infrastructure; (3) train teachers and provide the on-going support they need to engage all students in active learning by doing; and (4) make available education software that is as engaging as the best video game and as inspiring as learning with an expert tutor.

A quick review of the attached diagram shows that schools have a long way to go in achieving the intermediate objective on the rough indicators shown. Businesses and homes are both arguably much further along than schools in getting in position to integrate each of the components of the information technology revolution into their daily work and lives. See diagrams 2 and 3 attached.

Background for Recommendations on Options. As in every such national challenge, money is an issue -- even if we do everything that we can to craft this as a grass-roots -- and largely state-local, private sector revolution. Based on the studies of the Rand Corporation for Secretary Riley's draft National Education Technology Plan, the McKinsey for the NII Advisory Committee, and our own best guesstimate, it appears that a "steady state" budget to achieve the four ambitious intermediate objectives would require approximately \$12.4 billion

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annually. These analyses provide different amounts for each of the four, but the cumulative total is the same under all three of the analyses. (Summaries of the analyses are available for your review.)

By way of comparison, it is estimated that schools now spend approximately \$3.3 billion on education technology. For purposes of analysis in considering alternative options for the Trust Fund, we assume that the \$12.4 billion funding objective could be achieved from three sources: \$8.0 billion from K-12 budgets (including current federal programs like Chapter 1), \$2.4 billion from private sector commitments, and \$2.0 billion from a new matching Trust Fund.

The rate of ramp-up also needs to be considered. McKinsey estimates that schools now spend about 1.3% of their total budgets on educational technology, and that this percentage has been and, without additional federal support, will continue to rise rapidly -- to 2.1% by 2000 and to 3.6% by 2005. McKinsey also estimates that this funding would be sufficient in 2005 to achieve the four ambitious intermediate objectives in most of the schools in the country (assuming, of course, schools are transformed in the process into high performance learning centers). As a result, any decision on establishing a Trust Fund must be premised on a judgement that it is important to increase the rate of growth in funding, to advance the date of achieving the goals from 2005 to 2000, and/or to assure that the technological revolution(a) actually helps to increase student learning in all schools or (b) at least does not leave out poor schools.

Finally, if the President of the United States is to succeed in leading this education technology revolution, we need to consider how he can best demonstrate his authority. The gut issue is whether a President has sufficient credibility if he fails to propose some major federal financial support to assist in paying for the revolution in learning technology. A related issue is whether there is an alternative federal commitment that the President could make that would better demonstrate his credibility and capture the imagination of the country. To date out list of ~~alternative federal~~ commitments that the President can make without legislation do not include such an option; we will therefore be looking for additional options, for legislative and non-legislative commitments.

— need to explain the trust fund first

Option 1: No Trust Fund.

Pros: [Does the Trust Fund serve no purpose -- because states, districts, and schools will do it anyway as rapidly as advances in the related technologies reasonably permit? Is there another more important and captivating commitment that the President can better propose? Do the sources of funding described below raise such political or budget problems as to outweigh the potential benefits of the Trust Fund? Will the idea of a Trust Fund be perceived as "old wave" -- and, if so, is there a "new wave" public-private alternative, perhaps with 50 State Education Technology Fund counterparts, e.g., with a defined term of 5 years mission and a time-limited 5-year source of funds? Or are such structural suggestions just window-dressing for federal matching funds? Will it deflate the President's credibility if the Republican Congress rejects such a proposal?]

DRAFT

Cons: [Does the Trust Fund provide instant national credibility for the campaign and for the President? Is it a capstone that all will agree will -- if implemented -- help all aspects of achieving the interim objectives and, if properly structured, the ultimate goals? Does the proposal of the Trust Fund put the Congress to the choice of either following the President's lead or losing credibility? Is the education technology revolution a defining issue for the nation and for the President?

Option 2: Trust Fund

a. Sources of Funds:

1. Budget Priority. [Apfel and Litan fill out basic description and pros and cons] or

2. Spectrum Sales. As reported in the Wall Street Journal on 9/12, Senator Pressler is considering a proposal to auction off the digital broadcast spectrum in major markets; estimates of revenues are substantially in excess of the \$10 billion needed to fund a five-year Trust Fund (and any Endowment for PBS). Pressler's proposal responds both to balanced budget pressures and to the outcries of many other telecommunication companies, think tanks and interest groups that, as the Wall Street Journal editorializes, providing the digital spectrum to TV Broadcasters for free now is a "GOP Giveaway." If the Senate Commerce Committee is ready to embrace a sale of the Digital TV Spectrum for major markets now, we could condition our approval on the sale on the use \$2 billion of the proceeds per year for five years to finance the Trust Fund. [Sallet, Litan, Deich and (Treasury?) fill out basic options, and pros and cons.]

and(?)

3. "Voluntary" Contributions [Litan, Sallett, and 9Treasury?) fill out basic options and pros and cons. Is there an analogy here to the Fish and Game Industry volunteering to a "fee" on fishing rods for Breaux's Fish and Game Trust Fund? Given the far greater financial wherewithal of the entire telecommunication, entertainment, computer, and software industries and their arguably common interests in educating children and in building bigger markets in schools (and homes) is there any "fee" or "voluntary tax" or "contribution" that might involve \$2 billion per year? Is there a chance that whatever it is that it could win the support of major industry champions, who might be able to shame their competitors into "volunteering" as well?]

b. Uses of Funds:

1. \$4 in State-local match (including all sources of federal funding except the Trust Fund) for each \$1 from the Trust Fund. This would provide matching funds for the level of current expenditures and a strong incentive for increasing State-local expenditures on education technology. Current evaluations indicate that Title I schools have more access to computers. [Smith and Apfel fill out basic details and pros and cons.]

and

2. Permissible Uses of Fund and Accountability for Expenditures. [Smith and Apfel fill out basic options, and pros and cons].

c. Organizational Structure of Fund:

[Litan, Deich, and Sallett fill out basic options, including any joint Public-Private Venture -- e.g., with strong representation on a governing board of those who put up financing; with 50 State Education Technology Trust Funds, etc.]

model of \$B

1. Expansion of the Universal Service Fund (USF).

Both the House and Senate telecommunications bills would expand the Universal Service Fund, now administered by the states and overseen by the FCC, to include paying for wiring to and inside of schools for computers and advanced communications. The Administration and the FCC have quietly worked with sympathetic members to have these provisions included in the telecommunications bills. Although the Administration has threatened to veto the bills in their present form, you are on record as supporting the use of the USF for these purposes.

More specifically, the USF provisions would require all telecommunications providers -- not just telephone companies -- to contribute to the USFs. CBO has scored these provisions as raising a total of \$7.1 billion over the 1997-2000 time period, as follows:

	(\$ in millions)				Total
	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>(1996-2000)</u>
Expansion of USF.....	600	1,400	2,200	2,900	7,100

CBO has not indicated what portion of these funds would be devoted just to the wiring of schools and classrooms, but has indicated in staff conversations the number is "significant". OMB believes the total is in the range of \$2-3 billion.

Bear in mind, that these funds are conditioned would flow directly to the states and would not require a match. In addition, the bills would limit the spending of the funds just for the wiring of schools and classrooms. Nevertheless, even \$2-3 billion would make a significant contribution toward the total funding requirements of this initiative. the President is on record as supporting the expansion of the USF to provide connectivity for schools.

3. Broadcast Spectrum Auctions

Finally, the Administration could use some of the revenues from auctioning broadcast spectrum to fund any remaining funding requirements. To understand these options, however, some background is useful.

The Federal Communications Commission (FCC) is currently planning to give the television broadcasters additional spectrum to allow them to begin transmitting in a digital format. The FCC's plan is to provide this new spectrum for free, to allow broadcasters and consumers 10 to 15 years to buy the equipment necessary to send and receive digital signals, and to reclaim the broadcaster's current spectrum allocation at some as yet undefined future date. In the 10-year balanced budget, the Administration proposed an auction in 2002 of the spectrum currently used by the broadcasters after they migrate to the digital channel and return the analog

spectrum to the government. OMB estimated the receipts from an auction of the reclaimed analog broadcaster spectrum at \$27 billion in 2002-2005; CBO has scored this proposal so far at only \$17 billion. OMB has discussed this proposal with staff of various members of the Senate Commerce Committee. Senator Lieberman initially had expressed some interest in introducing the concept, but in light of recent developments described below, has stepped back and continues to assess his position. In any event, an analog spectrum auction could provide no revenues for any educational initiative since the auction cannot practically take place until after 2000.

The alternative to auctioning the analog spectrum much later is to begin auctioning now (or very soon) the digital spectrum, which CBO has scored thus far at \$11 billion over the next five years; the FCC has recently issued a much higher estimate of \$37 billion. There is mounting support for auctioning digital among Republicans in the Senate Commerce Committee, including Sen. Stevens, who has sharply criticized the broadcasters for opposing this idea, and most recently, Chairman Pressler, who has just endorsed the concept and offered to devote \$4 billion of the proceeds to a trust fund to finance the Corporation for Public Broadcasting. The House Commerce Committee has rejected the digital auction, although it has voted for the auction of additional spectrum for wireless communications, which the CBO has just scored at \$14 billion (up from an earlier estimate of \$8.3 billion, a figure we used in our budget plan).

For purposes of reconciliation, you will have to decide which of the two broadcast spectrum options -- analog or digital -- we will want to support for purposes of deficit reduction. The choice must be made because, given the strong opposition of the broadcasters to both auctions, it will be politically impractical to insist upon both.

A key advantage of auctioning the digital spectrum is that it can be done in the 1997-2000 time frame, and thus some of the revenues could be available for financing a portion of this educational initiative. In addition, authorizing the digital spectrum auction now would assure that some auction revenues are actually realized. In contrast, even if we persuaded Congress to adopt the analog auction, it is so far away -- not beginning until 2002 -- that there would be plenty of time for the broadcasters to try to get that decision reversed.

We have identified two digital spectrum funding options:

Automatic Funding of the Educational Initiative: Under this option, you could decide that some portion of the digital spectrum proceeds automatically fund the initiative. Of course, any such amounts would not then be available for deficit reduction. For example, if the Pressler approach that funds CPB out of the spectrum proceeds were accepted, \$7 billion in CBO-scorable proceeds would be available for the initiative. If, say \$5 billion, of this amount were channelled to the initiative, this would mean that the remaining \$2 billion would be available to reduce the deficit. Combining this amount with the \$14 billion in CBO-scorable revenues from the wireless spectrum would produce a total of \$16 billion in deficit reduction that would be scored by CBO. Of course, if the FCC is correct that the digital auction would raise \$37 billion rather than the CBO level of \$11 billion, then the deficit would be reduced by an additional \$26 billion (although we could not score this for reconciliation purposes).

Contingent Funding: Alternatively, you could decide to make the funding from the digital auction contingent on the auction raising more than the \$11 billion scored by CBO -- an outcome you could proclaim as highly likely, given the FCC's estimate of \$37 billion. This option would enable you and the Congress to claim a total of \$25 billion in deficit from all auctions (\$14 billion from the wireless and \$11 billion from digital) if CPB is not funded through the auction proceeds (or a lower \$21 billion if CPB is funded in this manner). Note that under the original CBO scoring, our proposals -- wireless and broadcast -- also would have reduced the deficit by a combined \$25 billion (although most of that reduction would have come in "out years" because the analog spectrum cannot begin until 2002).

Option Z: Establish a \$200 million trust fund in 1996. Increase the Department of Education investment to \$800 million by 1999.

There is authority that could accomodate the kinds of activities contemplated for the trust fund in the options papers in the Technology title of the Elementary and Secondary Education Act (Title III). Using this authority, it may be possible to derive funds from existing Department of Education programs for the trust fund. A list of these programs is described below and on the attached table.

For FY 1996, there are two scenarios for providing funds from existing education programs:

- a) Reprogramming. Reprogramming allows funds that are not earmarked for specific purposes to be moved administratively to another program in the same appropriations account. If the Title III ESEA authority is used, between \$247 million and \$323 million (House mark, and Senate subcommittee mark, respectively) would be available under the appropriation for the Office of Educational Research and Improvement, which funds activities authorized under this title. These funds already support the Technology Learning Challenge Grant program at \$25 million; the remaining \$222 funds Research, Statistics, Assessment, and other small demonstration programs. A reprogramming to support a \$200 million initiative in FY 1996 would virtually eliminate these other activities. The extent to which reprogramming is viable is not clear.
- b) Budget Amendment. A more realistic approach would be for the administration to submit a budget amendment to Congress redirecting resources pending before Congress. Even though floor action is over in both Houses, this amendment could be the basis for an amendment to the Conference Report, or an amendment after final action.

The attached tables list possible programs as offsets for a \$200 million trust fund. Each of these programs has vocal congressional supporters and public constituencies who would likely object to diverting money from these for a technology initiative.

Ramp-Up in the Outyears. In order to increase the trust fund to a level of \$800 million by 1999, the fund would require a \$200 million increase each year. (The \$800 million level represents approximately 5 percent of the Federal Government's contribution to elementary and secondary education, and relates to the share of total elementary and secondary education resources experts believe should ultimately be devoted to educational technology.) The President's June balanced budget provides an increase for federal elementary and secondary programs of approximately \$250 million annually, on top of the FY 1996 request. Thus, the trust fund could increase by the \$200 million per year and still fall within the balanced budget guidelines. However, as a result, the priority programs slated for increases -- Goals 2000 and Title I Education for the Disadvantaged, for example -- would be straightlined in the outyears at the FY 1996 request levels, or other lower priority programs would be significantly reduced or eliminated. The decision to reduce amounts from current programs in favor of this initiative presumes that benefits to students will be as great or greater than from these other programs.

Option 2: Establish an education trust fund as part of the President's FY 1997 budget proposal.

Under this option, first year funding of the trust fund would begin in FY 1997; the fund would be fully funded at \$800 million by FY 2000. Here, the issues associated with reprogramming or redirecting existing resources through a budget amendment fall away. Policy for funding the initiative parallels that of the "ramp-up" discussed in Option 1. The fund could be announced ahead of the release of the FY 1997 budget.

Possible ED Budget Offsets for the Education Technology Trust Fund

SEP 15 1995

Option 1A: Reprogramming 1996 funds totalling \$200 million

Reprogrammed funds can only move within the same appropriations account and so must come from the Office of Educational Research and Improvement programs.

	House	Senate	House Total	Senate Total
Demos and Dissemination				
50% of the Fund for the Improvem't of E	19		23	
21st century			1	
Civic Ed.	3		4	
Regional M/S Cons.			15	
Javits	3		3	
Writing Project			3	
NDN			10	
Research				
Research, Statistics, and Assessment	182		167	
Technology				
TLC	25		25	
Star Schools			25	
Ready-to-Learn			6	
Math Demo			1	
OPTION 1 TOTAL			232	283

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Possible ED Budget Offsets for the Education Technology Trust Fund

Option 1B: Budget Amendment for 1996 funds totalling \$200 million

With a budget amendment, funds may be taken from programs in a variety of appropriations accounts

	House	Senate	House Subtotals	Senate Subtotals
Demos and Dissemination				
50% of FIE	19	23		
21st century		1		
Civic Ed.	3	4		
Regional M/S Cons.		15		
Javits	3	3		
Writing Project		3		
NDN		10		
Research				
30% of Research	34	30		
Technology				
TLC	25	25		
Star Schools		25		
Ready-to-Learn		6		
Math Demo		1		
Libraries	102	132		
OPTION 1 SUBTOTAL			186	278

STATE TECHNOLOGY GRANTS

States would submit a state technology plan for bringing educational technology to all elementary and secondary schools in the state. The state can use its Goals 2000 state technology plan or submit a revised plan. This work could be carried out under the state grant program, slightly modified, in the Improving America's Schools Act of 1994. The statutory language is attached.

The proposed state grant would require a match by the state of \$4 for every \$1 of state grant funds. The state would indicate the amount of funds it will spend and where the funds will come from (federal, state, etc). The state's matching requirement would not be subject to a Department audit in order to reduce the paperwork burden for the state. A ceiling for a state grant might be set at some percentage of its Title I funding.

The state technology plan would need to address five topics:

- 1) connecting up schools and classrooms
- 2) getting hardware into schools and classrooms
- 3) training teachers to incorporate technology into classroom instruction
- 4) developing and using software tied to state and local academic standards
- 5) establishing timelines for implementation with performance indicators and benchmarks

The state plan would be submitted to the U.S. Department of Education and the state would submit evidence of yearly progress.

Performance indicators

In its plan, the State would describe the goals it will reach by 2002, a set of performance indicators to measure progress toward the goals, and yearly benchmarks of progress toward the goals.

The state would define its goals and select its indicators and benchmarks. The goals and indicators would need to be in the four program areas described in the plan.

1. Connecting up schools and classrooms

Possible goals and indicators:

- Goal: connecting every classroom to the Internet by 2002
- Indicator: number of connected classrooms

- Goal: establishing a LAN in every school
- Indicator: the percentage of schools with LANs

- Goal: connecting home computers to school computer networks
- Indicator: the percentage of schools that allow for home hook up

2. Getting hardware into schools and classrooms

Possible goals and indicators:

- Goal: adequate number of computers for students in every school
- Indicator: 1 computer for every 4 students

- Goal: access of teachers to computers
- Indicator: 1 computer for every teacher

- Goal: access to computers to run sophisticated software
- Indicator: capacity of computers (number of 386s); number of CD-ROMS

3. Training teachers in how to incorporate technology into classroom instruction

Possible goals and indicators:

- Goal: all teachers will be trained in the use of technology
- Indicator: percentage of teachers with technology training

- Goal: extensive use of technology in instruction
- Indicator: percentage of teachers using technology in daily instruction

- Goal: improvement in technology aided classroom instruction
- Indicator: increase in student achievement

4. Developing and using software tied to state and local academic standards

- Goal: availability of software tied to state or local standards
- Indicator: number of schools with software programs available

- Goal: use of software tied to state or local standards
- Indicator: percentage of teachers using software

than one year after the date of enactment of the Improving America's Schools Act of 1994.

"Subpart 2—State and Local Programs for School Technology Resources

"SEC. 3131. ALLOTMENT AND REALLOTMENT.

"(a) ALLOTMENT.—

"(1) **IN GENERAL.**—Except as provided in paragraph (2), each State educational agency shall be eligible to receive a grant under this subpart for a fiscal year in an amount which bears the same relationship to the amount made available under section 3114(a)(1)(C) for such year as the amount such State received under part A of title I for such year bears to the amount received for such year under such part by all States.

"(2) **MINIMUM.**—No State educational agency shall be eligible to receive a grant under paragraph (1) in any fiscal year in an amount which is less than one-half of one percent of the amount made available under section 3115(a)(1)(C) for such year.

"(b) REALLOTMENT OF UNUSED FUNDS.—

"(1) **IN GENERAL.**—The amount of any State educational agency's allotment under subsection (a) for any fiscal year which the Secretary determines will not be required for such fiscal year to carry out this subpart shall be available for reallocation from time to time, on such dates during such year as the Secretary may determine, to other State educational agencies in proportion to the original allotments to such State educational agencies under subsection (a) for such year, but with such proportionate amount for any of such other State educational agencies being reduced to the extent such amount exceeds the sum the Secretary estimates such State needs and will be able to use for such year.

"(2) **OTHER REALLOTMENTS.**—The total of reductions under paragraph (1) shall be similarly reallocated among the State educational agencies whose proportionate amounts were not so reduced. Any amounts reallocated to a State educational agency under this subsection during a year shall be deemed a subpart of such agencies allotment under subsection (a) for such year.

"SEC. 3132. SCHOOL TECHNOLOGY RESOURCE GRANTS.

"(a) GRANTS TO STATES.—

"(1) **IN GENERAL.**—From amounts made available under section 3131, the Secretary, through the Office of Educational Technology, shall award grants to State educational agencies having applications approved under section 3133.

"(2) **USE OF GRANTS.**—(A) Each State educational agency receiving a grant under paragraph (1) shall use such grant funds to award grants, on a competitive basis, to local educational agencies to enable such local educational agencies to carry out the activities described in section 3134.

"(B) In awarding grants under subparagraph (A), each State educational agency shall ensure that each such grant is

of the Improving Ameri-

Programs for School Grants

provided in paragraph (2),
be eligible to receive a
year in an amount which
amount made available
year as the amount such
for such year bears to the
such part by all States.

onal agency shall be eligi-
h (1) in any fiscal year in
half of one percent of the
on 3115(a)(1)(C) for such

of any State educational
(a) for any fiscal year
not be required for such fis-
all be available for realloc-
during such year as the
te educational agencies in
to such State educational
h year, but with such pro-
er State educational agen-
amount exceeds the sum
ods and will be able to use

total of reductions under
allotted among the State
state amounts were not so
State educational agency
shall be deemed a subpart
bsection (a) for such year.

CE GRANTS.

ts made available under
the Office of Educational
State educational agencies
section 3133.

State educational agency
(1) shall use such grant
itive basis, to local edu-
al educational agencies to
ection 3134.

r subparagraph (A), each
re that each such grant is

of sufficient duration, and of sufficient size, scope, and quality,
to carry out the purposes of this part effectively.

"(b) TECHNICAL ASSISTANCE.—Each State educational agency
receiving a grant under paragraph (1) shall—

"(1) identify the local educational agencies served by the
State educational agency that—

"(A) have the highest number or percentage of children
in poverty; and

"(B) demonstrate to such State educational agency the
greatest need for technical assistance in developing the ap-
plication under section 3133; and

"(2) offer such technical assistance to such local educational
agencies.

"SEC. 3133. STATE APPLICATION.

"To receive funds under this subpart, each State educational
agency shall submit a statewide educational technology plan which
may include plans submitted under the Goals 2000: Educate Amer-
ica Act or other statewide technology plans which meet the require-
ments of this section. Such application shall be submitted to the
Secretary at such time, in such manner, and accompanied by such
information as the Secretary may reasonably require. Each such ap-
plication shall contain a systemic statewide plan that—

"(1) outlines long-term strategies for financing technology
education in the State and describes how business, industry,
and other public and private agencies, including libraries, li-
brary literacy programs, and institutions of higher education,
can participate in the implementation, ongoing planning, and
support of the plan; and

"(2) meets such other criteria as the Secretary may establish
in order to enable such agency to provide assistance to local
educational agencies that have the highest numbers or percent-
ages of children in poverty and demonstrate the greatest need
for technology, in order to enable such local educational agen-
cies, for the benefit of school sites served by such local edu-
cational agencies, to carry out activities such as—

"(A) purchasing quality technology resources;

"(B) installing various linkages necessary to acquire
connectivity;

"(C) integrating technology into the curriculum in
order to improve student learning and achievement;

"(D) providing teachers and library media personnel
with training or access to training;

"(E) providing administrative and technical support
and services that improve student learning through en-
riched technology-enhanced resources, including library
media resources;

"(F) promoting in individual schools the sharing, dis-
tribution, and application of educational technologies with
demonstrated effectiveness;

"(G) assisting schools in promoting parent involvement;

"(H) assisting the community in providing literacy-re-
lated services;

"(I) establishing partnerships with private or public educational providers or other entities to serve the needs of children in poverty; and

"(J) providing assurances that financial assistance provided under this part shall supplement, not supplant, State and local funds.

"SEC. 3134. LOCAL USES OF FUNDS.

"Each local educational agency, to the extent possible, shall use the funds made available under section 3132(a)(2) for—

"(1) developing, adapting, or expanding existing and new applications of technology to support the school reform effort;

"(2) funding projects of sufficient size and scope to improve student learning and, as appropriate, support professional development, and provide administrative support;

"(3) acquiring connectivity linkages, resources, and services, including the acquisition of hardware and software, for use by teachers, students and school library media personnel in the classroom or in school library media centers, in order to improve student learning by supporting the instructional program offered by such agency to ensure that students in schools will have meaningful access on a regular basis to such linkages, resources and services;

"(4) providing ongoing professional development in the integration of quality educational technologies into school curriculum and long-term planning for implementing educational technologies;

"(5) acquiring connectivity with wide area networks for purposes of accessing information and educational programming sources, particularly with institutions of higher education and public libraries; and

"(6) providing educational services for adults and families.

"SEC. 3135. LOCAL APPLICATIONS.

"Each local educational agency desiring assistance from a State educational agency under section 3132(a)(2) shall submit an application, consistent with the objectives of the systemic statewide plan, to the State educational agency at such time, in such manner and accompanied by such information as the State educational agency may reasonably require. Such application, at a minimum, shall—

"(1) include a strategic, long-range (three- to five-year), plan that includes—

"(A) a description of the type of technologies to be acquired, including specific provisions for interoperability among components of such technologies and, to the extent practicable, with existing technologies;

"(B) an explanation of how the acquired technologies will be integrated into the curriculum to help the local educational agency enhance teaching, training, and student achievement;

"(C) an explanation of how programs will be developed in collaboration with existing adult literacy services providers to maximize the use of such technologies;

"(D)(i) a description of how the local educational agency will ensure ongoing, sustained professional development

with private or public
to serve the needs of

financial assistance pro-
vided, not supplant, State

where possible, shall use
(a)(2) for—

including existing and new
school reform effort;
and scope to improve
support professional de-
velopment;

resources, and services,
and software, for use by
media personnel in the
centers, in order to im-
prove instructional program
students in schools will
focus on such linkages, re-

development in the inte-
gration into school curricu-
lums of educational tech-

telecommunications area networks for pur-
posely educational programming
of higher education and

for adults and families.

ing assistance from a State
(2) shall submit an appli-
cation to a statewide plan,
and, in such manner and
form as the State educational agency
may, at a minimum, shall—
(3) (three- to five-year), plan

of technologies to be ac-
quired for interoperability
technologies and, to the extent
possible;

the acquired technologies
curriculum to help the local edu-
cational agency, training, and student

programs will be developed
multiliteracy services provid-
ing technologies;

the local educational agen-
cy professional development

for teachers, administrators, and school library media per-
sonnel served by the local educational agency to further the
use of technology in the classroom or library media center;
and

"(ii) a list of the source or sources of ongoing training
and technical assistance available to schools, teachers and
administrators served by the local educational agency, such
as State technology offices, intermediate educational sup-
port units, regional educational laboratories or institutions
of higher education;

"(E) a description of the supporting resources, such as
services, software and print resources, which will be ac-
quired to ensure successful and effective use of technologies
acquired under this section;

"(F) the projected timetable for implementing such plan
in schools;

"(G) the projected cost of technologies to be acquired
and related expenses needed to implement such plan; and

"(H) a description of how the local educational agency
will coordinate the technology provided pursuant to this
subpart with other grant funds available for technology
from State and local sources;

"(2) describe how the local educational agency will involve
parents, public libraries, business leaders and community lead-
ers in the development of such plan;

"(3) describe how the acquired instructionally based tech-
nologies will help the local educational agency—

"(A) promote equity in education in order to support
State content standards and State student performance
standards that may be developed; and

"(B) provide access for teachers, parents and students
to the best teaching practices and curriculum resources
through technology; and

"(4) describe a process for the ongoing evaluation of how
technologies acquired under this section—

"(A) will be integrated into the school curriculum; and

"(B) will affect student achievement and progress to-
ward meeting the National Education Goals and any chal-
lenging State content standards and State student perform-
ance standards that may be developed.

"(d) FORMATION OF CONSORTIA.—A local educational agency for
any fiscal year may apply for financial assistance as part of a con-
sortium with other local educational agencies, institutions of higher
education, intermediate educational units, libraries, or other edu-
cational entities appropriate to provide local programs. The State
educational agency may assist in the formation of consortia among
local educational agencies, providers of educational services for
adults and families, institutions of higher education, intermediate
educational units, libraries, or other appropriate educational enti-
ties to provide services for the teachers and students in a local edu-
cational agency at the request of such local educational agency.

"(e) COORDINATION OF APPLICATION REQUIREMENTS.—If a local
educational agency submitting an application for assistance under
this section has developed a comprehensive education improvement

plan, in conjunction with requirements under this Act or the Goals 2000: Educate America Act, the State educational agency may approve such plan, or a component of such plan, notwithstanding the requirements of subsection (e) if the State educational agency determines that such approval would further the purposes of this subpart.

"SEC. 3136. NATIONAL CHALLENGE GRANTS FOR TECHNOLOGY IN EDUCATION.

"(a) GRANTS AUTHORIZED.—

"(1) IN GENERAL.—From amounts made available under section 3115(b)(1) for any fiscal year the Secretary is authorized to award grants, on a competitive basis, to consortia having applications approved under subsection (d), which consortia shall include at least one local educational agency with a high percentage or number of children living below the poverty line and may include other local educational agencies, State educational agencies, institutions of higher education, businesses, academic content experts, software designers, museums, libraries, or other appropriate entities.

"(2) DURATION.—Grants under this section shall be awarded for a period of 5 years.

"(b) USE OF GRANTS.—Grants awarded under subsection (a) shall be used for activities similar to the activities described in section 3134.

"(c) PRIORITY.—In awarding grants under this section, the Secretary shall give priority to consortia which demonstrate in the application submitted under subsection (d) that—

"(1) the project for which assistance is sought is designed to serve areas with a high number or percentage of disadvantaged students or the greatest need for educational technology;

"(2) the project will directly benefit students by, for example, integrating the acquired technologies into curriculum to help the local educational agency enhance teaching, training, and student achievement;

"(3) the project will ensure ongoing, sustained professional development for teachers, administrators, and school library media personnel served by the local educational agency to further the use of technology in the classroom or library media center;

"(4) the project will ensure successful, effective, and sustainable use of technologies acquired under this subsection; and

"(5) members of the consortia or other appropriate entities will contribute substantial financial and other resources to achieve the goals of the project.

"(d) APPLICATION.—Each local educational agency desiring a grant under this section shall submit an application to the Secretary at such time, in such manner, and accompanied by such information as the Secretary may reasonably require.

"SEC. 3137. FEDERAL ADMINISTRATION.

"(a) EVALUATION PROCEDURES.—The Secretary shall develop procedures for State and local evaluations of the programs under this subpart.

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TECH CORPS: TIMELINE AND IMPACT

The **mission** of Tech Corps is to recruit, place, and support volunteers from the technology community who advise and assist schools in the introduction and integration of new technologies into the educational system. Volunteers will provide assistance with local planning, technical support and advice, staff training, mentoring, and classroom interactions.

- The President needs to credit Gary Beach for proposing the Tech Corps concept, and also the Massachusetts Software Council, ComputerWorld, and Deloitte and Touche for helping to get it off the ground in Massachusetts (by sponsoring the MA Tech Corps pilot).
- Gary Beach will let the President take as much credit as he wishes for the national Tech Corps. The President can demonstrate his support by directing the agencies to participate in the Tech Corps to the extent that their missions and budgets allow. He can also sign an executive order giving federal employees release time or flextime to use for volunteering in Tech Corps.
- The Tech Corps organization (a nonprofit 501(c)3) has been chartered and an Executive Director and a National Program Director have been hired (tax exempt status being pursued). It will be implemented under state-based model - under the national umbrella, each state will have its own state Tech Corps organization.
- Six states (MA, IA, IL, TN, NM, CO) have drafted state organization and implementation plans. Four additional states (CA, FL, HI, NY) have been added; they are on the fast track and have started work on their plans.

Timeline

October 95	A National Tech Corps Chartering Conference will be held in DC on October 30, 1995. Representatives from all 50 states will be invited to attend. At the Conference, they will be introduced to the Tech Corps plan, shown six sample state implementations, and given chartering kits so that they can implement a Tech Corps chapter in their own state.
Winter 1995-95	States will undergo the chartering process (involves identifying a state coordinator and a nonprofit home for the state tech corps organization).
Spring 1996	Each state will recruit school districts interested in getting Tech Corps volunteers.
Late Spring 1996	A national call for volunteers will be made.
Summer 1996	Orientation for school coordinators and volunteers will take place in each state.
September 1996	Volunteers begin working in schools.

Impact

By September 1996, volunteers will be ready to begin actively working in the schools in all 50 states. Based on the Massachusetts pilot of Tech Corps, we expect that on average 300 volunteers will be working in 12 school districts in each state (i.e., **thousands of volunteers in potentially several thousand schools**). With sufficient public awareness and interest, this number could be significantly larger. States will plan to scale up the number of school districts and volunteers quickly (Massachusetts has gone from 300 volunteers in 12 districts starting in January to 42 school districts this fall).

End of 1996: 15,000 volunteers in 600 school districts

End of 1998: 125,000 volunteers in 5000 school districts

20 hours/year at \$20/hour for 125,000 volunteers = \$50M/year

UP version

GETTING GOOD COMPUTERS INTO THE CLASSROOMS

Barrier: Today, too few classrooms have the basic computer hardware necessary to ready our children for the 21st century economy. While schools now average 12 students for every computer, about half are so old they don't even have a hard drive. In fact in California, the computers in elementary school are on average older than the children themselves. And surprisingly, most high schools still teach keyboarding on typewriters.

Goal: By the year 2000, we need to ensure a modern computer in every classroom -- that is a computer with at least a hard drive. One important component of any plan to put computers in the classroom is refurbishing surplus federal computers for schools.

Issue: The federal government contributes millions of dollars worth of surplus and excess computer and related equipment to schools every year through GSA surplus transfer and direct transfer from agencies through a Bush Executive Order. These computers are often more modern than those already in classrooms that lack hard drives. Also, with simple refurbishing, these computers, often made available through government downsizing, can be upgraded or made into network servers and play an important role in modernizing the classroom. For instance, 25% of 286 computers can be converted to a modern 486 computers with an investment of less than \$300 dollars -- significantly less than what a new computer would cost. These computers are also more useful with basic operating systems and applications loaded.

The existing Executive Order that allows for surplus government computers to be given to directly to schools, unfortunately, does not allow those computers to be given to non-profit groups that refurbish used private sector computers and give them to schools. Additionally, the Executive Order does not make clear that other associated equipment, like telecommunications equipment and other essential equipment can be transferred directly to schools. Also, the nation's schools need to be better informed about surplus federal computers and how they can access this equipment.

Possible Actions:

1) Amend Executive Order 12821

Amend Section 1 to read "Assistance in Mathematics, Science and Computer Education."

Amend Section 1 by adding: " (iv) each office within each agency that has expertise in computer operations,"

Amend Section 2[b][1] to read "Identify and transfer excess education-related equipment at that agency that can be transferred to elementary and secondary schools or community-based non-profit organizations in collaboration with schools that will refurbish and upgrade the computers and make them available at no or low costs to

schools or educational institutions in the community by"

Amend Section 2 by adding after education-related Federal equipment "including telecommunications equipment,"

- 2) Instruct GSA to keep a record of the number of computers and other equipment going out through direct transfer and surplus equipment to schools. Report back to the President in six months.
- 3) The President can announce the creation of the GSA Federal Disposal System (FEDS), a computer data base listing all available surplus federal property. The FEDS will allow state surplus agencies to quickly access information on available surplus equipment and request equipment on-line thus speeding up the process of moving the computers out of the government into schools. Goals for GSA FEDS program include: a paperless transfer of computer equipment (all on-line), matching schools wish lists with computers available, getting on the Internet and training state agencies to use FEDS. FEDS will provide a one-stop shop for schools to make requests and find out about availability of equipment.
- 4) Consider targeting the computers to those schools that need it most -- disadvantaged communities (enterprise zone/enterprise communities) through Chapter 1 funding or new orders.
- 5) The President could direct the DoD to free up computers and telecommunications equipment from bases that are closing to send to schools. (Non-profits are having problems cutting through the red tape at the DoD to get used computers from closed military bases). The President could order agencies to cut the red tape to move surplus equipment to schools.
- 6) Challenge the private sector to support and help create Foundations like the Detwiler group, which refurbish and upgrade computers (through community colleges and prisons) and provide computers free to schools by matching the number of computers the schools get themselves.

THE FORMATION OF TEACHERNET -- A WEB SITE ON THE INTERNET FOR AND BY TEACHERS

Why is TeacherNET Necessary?

While the Internet has an abundance of information, finding exactly the right resource is often difficult. To encourage teachers to use technology in general, and the Internet in particular, there should be help for them. With so few teachers currently using the Internet in their classrooms, and the potential for exponential growth of classroom networking, there will be a tremendous need for help for teachers as they begin to use the Information Superhighway. There could be a place on the Internet where teachers could go to get help in locating educational resources. TeacherNET would be that place.

How might TeacherNET Work?

Teachers in need of curricular materials, primary sources, or other resources could ask in plain English. TeacherNET would respond. When teachers send in a request (E.g.. "I'm a biology teacher in a rural area and I'd like some information on the circulatory system. By the way, are there other biology teachers I could talk to about methods of teaching circulation?") TeacherNET would send out an automatic response - a question form that narrows the query to such things as grade level, Internet accessibility level, and types of materials needed, for example. Based on the teacher's needs, TeacherNET would use current search engines to locate the needed resources from non-commercial sources. Along with providing the resources, TeacherNET would send instructions on how to conduct such a search.

TeacherNET could also provide evaluation and guidance. Whatever group or networks that form the networks would be provide the screening. At the teacher's request, the information and resources could be screened for relevance and value. With the proliferation of information on the Internet, it is almost as difficult to discern what is truly important from what is merely peripherally connected to a topic.

For searches about popular topics, lists can be retained (and upgraded periodically) for quick retrieval when the next teacher requests it.

In addition, in response to the teacher's request for colleagues, TeacherNET would locate listservs, newsgroups, or other discussion forums that address the teacher's needs. If none exists, TeacherNET could search for willing participants for a new list that TeacherNET would sponsor or organize.

TeacherNET can help teachers get their students using the Internet as well by helping them locate curricular projects that address the topic the class is studying. If none exists, TeacherNET could search for willing participants for a new project that TeacherNET would sponsor or organize.

How will TeacherNET be created?

We believe that this effort can be created by a combination of private sector and professional teacher organizations, with some assistance from state and other existing networks. The private sector (e.g. Microsoft, Prodigy, America OnLine, Netscape, At&T) etc. know how to build the tools and resources that will enable teachers to navigate and collaborate on the Net. The growing number of state networks, such as TENET, and SENDIT, and the various groups that are already on line and building resources for teachers have to be part of TeacherNET. Like the Internet itself, TeacherNET will be a network of networks. The challenge will be in building the interfaces and links to these resources, and creating a workable point of entry that will get teachers going. The Federal government will help convene the players and provide support through existing projects as appropriate. We see the teacher organizations such as the NEA, NSTA, etc. directly involved as well.

A number of foundations are already working on similar projects. One strategy would be to pull them in and combine efforts. Additionally, several other foundations have indicated strong interest in supporting teachers use of technology and the development of a network for teachers.

**CONNECTING THE CLASSROOMS:
PASSAGE OF THE SNOW-ROCKEFELLER AMENDMENT**

Summary: The President should urge Congress to include the Snowe-Rockefeller provision in the conference on the telecommunications reform legislation. This provision is in the Senate bill but not the House bill.

Background: The Snowe-Rockefeller provision states that:

1. All telecommunications carriers must provide elementary and secondary schools with "universal service" at some level of discount that the FCC and the States find to be "necessary to ensure affordable access."
2. The amount of the discount provided to schools and libraries is counted against the universal service obligations of the telecommunications carriers.
3. The FCC may develop a separate definition of "universal service" that only applies to public institutions. [For example, universal service has traditionally been defined as basic telephone service. Schools would want to have more advanced services such as ISDN or high-speed leased lines.]

In addition to the Snowe-Rockefeller provision, the Senate bill also calls for the Commission and the States to encourage the deployment of advanced telecommunications services to all Americans, but particularly to schools. States can use price cap regulation, regulatory forbearance, and other methods that remove barriers to infrastructure investment. [For example, some states have allowed RBOCs to operate under price cap regulation if they agree to connect the schools.]

Pros:

1. This is a winnable issue. It has bipartisan support on the Senate, and Bliley (chairman of the House Energy and Commerce Committee) has indicated that he is open to some version of Snowe-Rockefeller.
2. This has very strong support in the educational community.

Cons:

1. This could reduce our leverage on other issues in the telecommunications issues that we care about in the bill. The President has said that he will veto the bill unless improvements are made on provisions such as cable rates, RBOC entry into long-distance, the V-chip, etc.
2. This could be seen as a tax, since universal service is funded by telecommunications providers, and ultimately results in higher phone bills.

A National Digital Library Initiative

- **Goal.** Convert historical materials to digital form so that they can be archived and made more open to public access than ever imagined.

- **Actions to be Taken.** A four pronged approach is proposed to realize this goal:

- **Making Research More Useful.** Continue research to develop more capable systems of storage and display and to develop relevant information processing standards.
- **Building Useful Collections.** Continue to digitize materials in government collections, but at a greatly accelerated pace. This is the most urgent unfunded priority.
- **Improving Access and Dissemination.** Take steps to provide access to holdings and to establish proper indices and inventories of digital holdings.
- **Improving the Grantmaking Process.** Take actions to increase the resources available to support digitization efforts.

- **Leverage Existing Federal Programs.** The needed actions require extensive coordination among a large number of federal organizations. A partial list of these organizations includes: NOAA, NASA, ARPA, NSF, NARA, Library of Congress, Smithsonian Institution, Government Printing Office, National Technical Information Service of the Department of Commerce, National Park Service, and the National Endowment for the Humanities. There have been some preliminary coordination meetings among these organizations, under the leadership of the Smithsonian Institution, but the pace and scope of those discussions must be expanded.

- **Private Sector Actions.** Federal funding can never be adequate to make the government's enormous, extended collections available in digital form. In order to address this issue it is proposed that a program be initiated through which successful applicants in the private sector will be awarded rights to repositories that they digitize. However, once the private sector digitizers have realized a reasonable return on their investment (e.g., 5 years of exclusive rights to the material), the rights to the digitized repositories will revert to the American public.

- **Barriers to Address.** There are several barriers that must be addressed if this initiative is to be successful. The first barrier affects the leveraging of existing federal programs. Several of the agencies that are important participants in the area are members of the legislative branch and are not part of the executive branch budget process. In addition, several of the organizations are primarily cost-recovery agencies that are essentially not part of the budget process. Thus, it may prove difficult to formulate balanced, long term programs and budgets that adequately coordinate across all of the affected organizations.

Second, arguments over property rights have blocked significant private investment. A mechanism must be established to award limited duration intellectual property rights to the digitized material to reward private sector participants who are willing to make the needed investments.

- **Bumper Stickers**

- (Digital) Libraries Without Walls
 - The Mother of All Libraries
 - Your Digital Library Card: Your Passport to History
-

(DRAFT - Close Hold)

DODDS: A MODEL FOR THE 21ST CENTURY SCHOOL

BACKGROUND

- The Department of Defense Dependent School (DoDDS) system consist of approximately 300 overseas K-12 schools with about 90,000 students.
- DoDDS is already using learning technology in the schools and has plans to make significant increases -- if funds can be made available.
- Personnel Support, Families, and Education, (the DoD Activity that manages DODDS) also oversees 50 Section 6 states-side schools with approximately 33,000 students (K-12) and the DoD child development (Pre-school) program, and consequently is in a position to integrate learning technology developments across communities.
- DoDDS has already served a testbed for demonstrating the insertion of leading edge information technologies into the school setting. Working with Defense agencies and the OSTP, a collaborative learning environment for physics based curricula was demonstrated using advanced network technologies.
- Additional technology insertion programs are currently underway in the DoD Dependent Schools under the auspices of the Advanced Research Projects Agency and the National Science Foundation. A principle goal of these programs is the evaluation of the efficacy of the technologies and their effect on learning outcomes.

GOALS

- Use DoDDS as the model for the Nations 21st Century Schools: demonstrate how advanced learning and communication technologies can be systematically designed, developed, and implemented in a large K-12 school system in order to significantly improve student achievement and performance.
- Create partnerships with software developers and produce a comprehensive series of high-quality K-12 courseware geared to National education standards.
- Make these products available to the large public and private education markets.

ACTIONS

Connections

DoD will establish basic internet links at each DoDDS and state-side military dependents school with sufficient capacity to support hook-ups for each student computer by the year 2000.

Computers

DoD will acquire sufficient computer resources (4:1 ratio) at each DoDDS and state-side military dependents school
Fund at least 33% of the requirement per year.

Teacher Training

DoD will establish an interactive Computer-Literacy Course and associated program for DoDDS and state-side military dependents school teachers and to participate in the formation of the TEACHERNET.

Content

DoD will develop an interactive core curriculum for DoDDS state-side military dependents schools which could be accessed over the internet or played on CD-ROMS.

Create partnerships with software developers so they will have market incentives to produce and proliferate a comprehensive series of interactive K-12 curriculum.

Direct Federal agencies to coordinate learning technology-related R&D (via the ILTO) and to sponsor tech demonstrations and transition efforts with public and private sector -- identify options which involve DoDDS

APPROACH

Assumptions/Issues

The goals of this initiative are compatible with those of the DoDDS community.

K-12 curriculum standards and training objectives already exists and can be used in the RFP.

One hour of interactive curriculum per day per grade level would be adequate.

It is practical and cost-effective to develop two format versions of each lesson -- one basic version for the internet and a higher quality CD-ROM version (full motion and sound) that could be used in homes or classrooms that possess adequate hardware.

Some Preschool materials (20-30 hours) could also be developed as a part of this effort.

Some Public Schools and Indian Schools could participate at no additional costs through existing partnerships programs with DoDDS (Verona Wi., Union City NJ, Hawaii, and BOIA)

Integral to the development effort will be a comprehensive evaluation of the cost-effectiveness of the individual lessons and their overall impact on student performance.

Estimate of Total Curriculum Development Costs

Going rate for interactive curriculum is about \$25K per hr

Total development cost (for 2160 lessons) would be \$45M

To meet FOC by the year 2000, approximately \$15M will be need per yr for the first 3 years

Incentives to Industry to Lower the Cost to DoD

Software developers have already developed many fine examples of K-12 curriculum but these programs do not support an entire curriculum. Therefore developers have great interest in expanding their market, especially nationwide.

DoD will offer software developers rights to sell CD-ROM versions of the programs to the Non-DoD market in return for either a royalty or for reduced acquisition costs.

DoD will also certify the instructional efficacy of each lesson -- ensuring schools and parents of the quality of the product.

DRAFT: 7/31/95

EXECUTIVE ORDER #####
INTERAGENCY LEARNING TECHNOLOGY OFFICE

By the authority vested in me as President by the Constitution and the laws of the United States of America, including _____ (Public Law #####), and in order to establish an interagency learning technology office to bring learning technology to bear on the objectives of education, training, and life-long learning, it is hereby ordered as follows:

Section 1. Establishment. There is established the Interagency Learning Technology Office ("the ILTO").

Section 2. Purpose. The purpose of the ILTO is to initiate and support focused collaborations of the technology agencies with the Department of Education to create and demonstrate learning technologies for the 21st century.

Section 3. Functions. (a) The principal functions of the ILTO are, to the extent permitted by law:

- (1) To initiate and support focused interagency collaborations in the research, development, demonstration, assessment, and dissemination of learning technologies across the Federal government.
- (2) To identify and focus the knowledge and expertise on learning technologies that exist within each of the Federal Departments and Agencies.
- (3) To promote and coordinate public-private sector collaboration, investments, and partnerships for improving learning productivity.
- (4) To serve as a single point of access to the best available learning technologies within the Federal government for state and local governments, private companies, and individual Americans.
- (5) To assist Federal agencies with identifying and using technology in major education and training programs.

(b) The ILTO may, at the discretion of its Director and consistent with FACA requirements, convene advisory panels to assist in the performance of its functions.

Section 4. Direction. (a) The Chair of the Executive Board of the ILTO ("the Chair") shall be a senior official of the United States Government, whose oversight of

the ILTO shall be added to his or her existing duties. Assignment to the position of ILTO Chair shall be made by the President of the United States, and the Chair shall serve at the pleasure of the President.

(b) The Executive Board shall be appointed by the National Science and Technology Council.

(c) The Executive Director of the ILTO shall provide day-to-day management of the ILTO and shall be appointed by and will report to the Executive Board.

Section 5. Administration. (a) Professional and support staff of the ILTO shall be assigned to the ILTO by the supported Departments and Agencies. The Department of Defense, the Department of Energy, the Department of Labor, the Central Intelligence Agency, and the National Aeronautics and Space Agency shall detail, on a nonrefundable basis, at least one senior level representative to the ILTO. Additional individuals may also be detailed to the ILTO by the Federal agencies mentioned herein or other agencies as needed. Staff of the ILTO shall:

- (1) serve as the project leaders and principal points of contact for their supporting agency's learning technology demonstration program(s);
- (2) coordinate demonstration proposals and plans with the Office of Science and Technology Policy, the Office of Management and Budget, and other Federal agencies as necessary, as well as with the NSTC Committee on Education and Training;
- (3) draft and staff interagency agreements to implement demonstration projects;
- (4) help focus and coordinate related Federal research and development programs with public and private sector organizations.

(b) Initially, the Department of Education shall provide core administrative and financial support for the ILTO.

(c) The ILTO may receive and make use of additional funding from any Federal agency.

Section 6. Future Modification. If any subsequent Public Law (including, but not limited to, an appropriation of funds for the use of the ILTO) deals with the ILTO, those portions of this Executive Order which are not inconsistent with this Public Law shall remain in force.

8/2/95 — Modify Section 2, Purpose, to read as follows:

Section 2. Purpose. The purpose of the ILTO is to initiate and support focused collaborations of the technology agencies with the Departments of Education *and Labor* to create and demonstrate learning technologies for the 21st century. *It will also encourage the use of technology in all Federal education and training programs.*

Reinventing Public Broadcasting

Background

It's very likely that the funding and management of public broadcasting in the US will be changed this year. This provides an opportunity to reinvent the entire idea of public broadcasting. Indeed, an innovative proposal is probably essential to preserve anything approaching existing services.

The proposal that follows builds on legislation being considered in the Commerce Committees of both the House and Senate. Both chambers are considering bills that would abolish the Corporation for Public Broadcasting and replace it with a Public Broadcasting Corporation. Details on both bills are sketchy but they consider finding some source of funding to capitalize the new corporation from sales of spectrum.

One issue raised by this form of funding is that it would free the Corporation from annual appropriations thereby weakening Congressional control. Currently funds are closely regulated with a formula requiring that 75% of the funds go directly to stations and 75% of these funds go for television with the rest for radio. The Corporation has always requested more flexibility but failed. Among other things, the PBS stations have used the available flexibility to experiment with interactive education schemes. The Senate bill would replace a management system where the President appoints the board, subject to senate approval, with a board where the President appoints only two members of seven.

Rule changes permitting more extensive "information messages" on public channels are also being considered as a way to attract more business funding.

Sale of the spectrum is tangled in a major battle over how to dispose of a public asset worth \$10-70 billion by FCC estimates. Pressler considered the option of auctioning the digital spectrum in several major markets and giving \$4 billion to public stations. This put PBS in a bind because commercial broadcasters with whom they want to maintain an alliance strongly object to the auction. PBS apparently has put a counter-offer in play which would simply give the new corporation some spectrum to use or lease as needed to finance their operations.

Proposal

1. Announce our intention to position public broadcasting for the 21st century and make it a part of a national program to develop first class educational materials with business partners. An announcement could include both PBS stations and corporate sponsors pledging support for the new venture.
2. Abolish the Corporation for Public Broadcasting and replace it with a *Public Telecommunications Corporation* with a mission which includes the existing CPB mission but also includes (a) use of all available information and communication technology, (b) provision of interactive digital services, and (c) a clear charter to promote lifelong learning (pre school to nursing homes).
3. Capitalize the new Corporation by giving it (a) all existing analog channels now used by public stations and (b) one digital channel for each analog channel. The Corporation or its member stations would be free to use, lease, or sell any of these channels to best serve their public mission. This allocation would be explicitly separated from decisions made about the disposition of the remaining broadcast spectrum.
4. The Board of Directors would be drawn from private, universities, and government officials appointed by the President
5. Encourage private sponsorship of the new corporation by liberalizing rules for placing corporate logos and messages in the information products offered, and by providing a receptive ground for experimenting with new information technology. PBS stations are proud that they have often been technological leaders -- being the first to use satellite downlinks to distribute programming and the first to use closed-captions.

Pro:

- Would open the way for a group with a proven track record in creative educational programming to experiment with new media for communicating with homes and schools.
- The public channels would welcome this expansion of their mission -- particularly clarification of their role in lifelong learning.
- Would shore up Congressional support for finding a solution to PBS's funding crisis because (a) it shows a willingness to undertake radical reinvention/restructuring, and (b) it supports a national commitment to education. Public outrage over Republican proposals to eliminate financing public broadcasting had a major impact since 91 Republicans broke ranks and voted against a proposal to abolish the program. What they lack is a viable proposal for saving it within budget constraints. This could provide one

Con:

- Could get entangled in the complex politics of auctioning broadcast spectrum and advanced television
- Spectrum valued at least \$4 billion would be transferred leaving less for budget balancing.
- Weakened Congressional oversight and increased corporate presence

Training Teachers

Draft: 9/8/95

Goal

By the year 2000, the nation's 2.9 million teachers will have the skills to use technology for effective teaching and learning. Today, approximately ten percent of teachers are proficient users of instructional technology. 500,000 additional teachers must receive training each year from now to the year 2000.

Executive Actions

- *Teacher Training Summit.* The Secretary of Education has committed to providing leadership and visibility to a national effort to train every teacher in the use of technology by the year 2000. In partnership with national organizations and the private sector, the Secretary will convene a summit in December to examine how to improve teacher preparation and scale up current efforts in order to reach more teachers. The use of technology to provide professional development; changing state certification requirements for teachers; individual teacher grants; and the Tech Corps, a voluntary organization of technology professionals who provide training and advice to schools are all strategies that will be discussed.
- *Tech Corps and National Technology Honor Society.* Both of these organizations will encourage badly-needed support for school staff who are beginning to use technology.
- *Regional Technology Consortia.* Six Regional Technology Consortia (RTC's), recently funded by the Department of Education, will push for new ways to reach more teachers. One priority for the RTC's is to help teachers and administrators integrate technology into classrooms through professional development and information and resource dissemination. Teacher training efforts in technology are also supported by the Department of Energy, NASA, the National Science Foundation, and dozens of federal research and development centers across the country -- reaching tens of thousands of teachers every year.
- *Funding.* The Eisenhower Professional Development Program and Title I provide teacher training funds by formula to states and school districts, mostly in mathematics and science. As there is no limit to how much of these funds can be used for professional development on the use of technology, this program can become an important means of supporting technology professional development.
- *Teacher networks.* Teachers report that they find great value in electronic networks that encourage teachers to share resources, information, techniques, and professional know-how. The Department of Education and other agencies will expand electronic teacher networks through federal programs such as Star Schools, the Challenge Grants, NSF's Applications of Advanced Technologies, Networking Infrastructure for Education, and

Teacher Enhancement programs, and the Department of Commerce's
Telecommunications and Information Infrastructure Applications Program (TIIAP).

Private Sector and State and Local Actions

States

States are a crucial partner. Today, states contribute to teacher training for technology by providing funds for training to districts, by providing training through statewide training centers, by supporting statewide networks of teachers, and by setting new teacher certification standards. Many more states will need to adopt these strategies to meet the goal.

- *Funds for training.* The Florida legislature allocated \$55 million for educational technology for the 1993-94 school year. Districts applying for these funds were required to set aside 30%, or over \$16 million, for training.
- *Statewide electronic networks.* As of early 1995, 37 states had statewide telecommunications networks of some kind. Funding for these networks has grown eleven-fold in the last two years, from \$18 million in 1993 to \$207 million in 1995. These networks provide free or inexpensive access for teachers to the Internet and have a strong focus on teacher professional development. Many provide on-line courses for teachers and resources such as lesson plans.
- *New teacher certification or in service requirements.* State certification requirements for teachers are set by state legislatures. In 1994, at least 18 states required training in computers or technology for all teachers seeking certification. This represents a 50% increase from 1987, when only 12 states had such requirements. Alabama requires that teachers receive at least some training each year on the use of computers. Vermont strongly recommends that districts do so.

Private Industry

Summer courses for teachers and encouraging employees to volunteer their technical know-how to schools are just a few ways businesses can support teacher training. If a business commits to training one percent of the teachers in a state or community in which it does business, each of those teachers can be asked to train ten of their colleagues, greatly expanding the impact of the initial investment.

High-tech companies can work with universities and school systems to develop the next generation of teacher training strategies. They can also offer equipment or software discounts for teachers.

FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

Office of Plans and Policy

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Karen Kornbluh
FCC
418-2042

The Universal Service Fund

Today

Size: The fund itself is \$750 million per year (1995). CBO estimates that all universal service mechanisms combined (including USF) run \$4 billion per year (1995).

Purpose: To subsidize high-cost telephone companies (predominately rural companies which need to extend telephone wires over longer distances) in order to protect the nationwide availability of telephone service at reasonable rates.

The USF is only one of a number of universal service cross-subsidy programs designed to make phone service available to all at a reasonable price. Other programs include: Lifeline and Link Up programs for poor individuals, Telecommunications Relay Service for deaf individuals, the Carrier Common Line and Subscriber Line Charges subsidizing local phone service by increasing long-distance phone bills.

Who Pays, Who Plays: Long distance carriers pay in. Only those Local Exchange Carriers (the regional Bell operating companies are LECs) whose local costs are above 115 percent of the national average receive subsidies.

Administration: FCC sets the guidelines (such as choosing the 115 percent threshold). The National Exchange Carriers Associations (NECA), a non-governmental organization, actually administers the program -- setting payment and subsidy levels and collecting and disbursing payments.

Future

Size: CBO predicts the USF plus other universal service mechanisms will grow to approximately \$3.7 billion by 2000 as a result of two facts: they will be responsible for making advanced telecommunications service -- not only phone service -- available and they will absorb many other subsidies.

Purpose: Still primarily concerned with ensuring rural areas access to services comparable to those available to the rest of country at comparable rates. However, purpose expanded:

In universal service sections of the bills: to include ensuring access to advanced telecommunications services for "elementary and secondary schools and classrooms" (Senate) or "students in elementary and secondary schools." Depending on the interpretation of "access" by the FCC and states, this could mean that telecommunications carriers could receive subsidies in order to provide discounts to schools.

In Section 310 ("Snowe-Rockefeller" section) of the Senate bill: to explicitly allow carriers to be reimbursed from the fund for discounts they are required to give schools in order to make advanced services affordable. Carriers are explicitly allowed to subtract the discounts they have provided from their payments to the fund. It is implied that essential (some rural) carriers would receive subsidy payments from the fund as reimbursement for the discounts they have provided.

Who Pays, Who Plays: According to both the House and the Senate telecommunications reform bills, all telecommunications carriers (including cable companies if they provide telecommunications) will pay in. However, in the Senate bill, only "essential carriers" -- certain rural carriers -- are eligible to receive subsidies.

Administration: Presumably, a non-governmental organization would continue to administer any funds.

Karen Kornbluh
FCC
418-2042

Provisions Relating to Connecting the Classrooms Senate and House Telecommunications Bills

The Senate

Section 310 ("Snowe-Rockefeller" provision) would require telecommunications service providers to give schools a discount on rates that would make service affordable -- if they receive a *bona fide* request from the schools. Any telecommunications carriers could take a credit against contributions to the universal service fund of the amount of the discounts it provided. "Essential telecommunications carriers" (carriers operating in rural areas) could receive subsidy payments reimbursing them for the amount of their discount.

- Installation vs. monthly rates: The Commission could interpret this to apply to either installation or monthly rates or both.
- Inside wiring: The Commission could issue grant telecommunications companies the ability to consider the wiring between the schoolhouse door and the classroom part of the network -- and so eligible for the subsidy. If companies do not ask or the Commission reject their request, inside wiring might not be included.

The section on reform of universal service lists seven principles for reform. Providing classrooms access to advanced technology is included as one of these key principles.

A National Education Technology Funding Corporation -- a non-profit corporation -- is designated to accept contributions from federal agencies and give grants and subsidized loans to schools. No funding for this corporation is provided, however.

The Commission is permitted to use regulatory relief to get schools networked.

The House

The section on reform of universal service lists five principles for reform. Providing students in schools access to advanced technology is included as one of these key principles.

DEPARTMENT OF HEALTH AND HUMAN SERVICES
ASSISTANT SECRETARY FOR PLANNING AND EVALUATION



PHONE: (202) 690-6461 FAX: (202) 690-5514

Date: 9/25/95

From: Martha Moorehouse

To: Tulic Swartzholm

Division: _____

Division: OSTP

City & State: _____

City & State: _____

Office Number: 690-6939

Office Number: 456-6046

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Fax Number: 456-6023

Number of Pages + cover 4

REMARKS: Here's what we've sent to Paul Dimond

DEPARTMENT OF HEALTH AND HUMAN SERVICES
ASSISTANT SECRETARY FOR PLANNING AND EVALUATION



PHONE: (202)690-7858 FAX: (202)690-7383

Date: 9/25/95

From: Peter Edelman

To: Paul Dimond

Division: OS/ASPE

Division: White House

City & State: Washington, DC

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Number of Pages + cover 3

REMARKS: Paul - Here is our piece of paper. We think it is self-explanatory and responsive to the discussion last week. We have seen the Dept. of Ed. draft roll out strategy memo, and think it is fine and that it fits with our proposal.

Call me with comments or questions.

-Peter

Department of Health and Human Services

Follow-Up Options Paper for the Educational Technology Working Group

September 25, 1995

We propose that the President issue a challenge to the best minds in the country -- industry leaders, experts on early childhood development and family support, educators, and scientists - to work together to harness educational technologies on behalf of our youngest children and their families, particularly our low-income children. We see this as the headline and heart of what the President should say.

We propose two federal activities beyond this broad challenge to all concerned: a ground breaking meeting to be convened by the National Academy of Sciences and/or the National Science Foundation, and an elaboration of the Challenge Grants for both rounds I and II. For all of these efforts, the appropriate focus is early childhood broadly defined. Thus, at a minimum, it would include settings for Head Start, Title I pre-kindergarten programs, child care, and family support programs. It would support child development in all domains and exemplify inclusion of children of different cultures, languages, races, and ethnicities, as well as children with disabilities. It would provide a strong substantive role for parents, and meaningful tools for early childhood staff to use. And it must complement other critical elements of the President's agenda for early childhood such as increases in enrollments.

First, we propose to fund the National Academy of Sciences and/or the National Science Foundation to hold a ground breaking meeting on advancing and harnessing educational technologies for young children, their families, and their communities in ways that will help ensure that low-income children do not drop further behind as we strive to meet the President's goals for a "world class education" for every child. We believe that visibly bringing the best minds together from technology, science, education, and the fields of child and family development is an essential first step. It is of fundamental importance for shifting the direction of the educational technology field and turning the spotlight on enabling our young children to enter school ready to learn. We know very little about good early beginnings to technological literacy, and poorly designed approaches have the potential to harm children and to raise concern and criticism from parents, the early childhood field, the public, and the press.

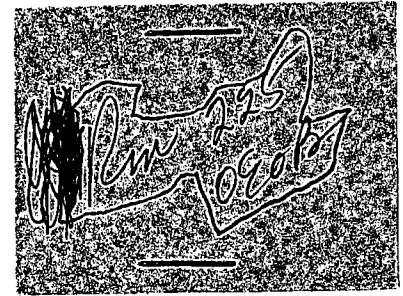
Second, HHS is excited about the possibility of collaborating with the Department of Education to jointly sponsor a reframed Challenge Grant initiative which focuses on early childhood. The ACF paper which we presented at the meeting on September 20th describes the principles around which HHS would frame this type of initiative. We can work quickly with the Department of Education on how our respective authorities might be combined. In light of the uncertainties around the FY '96 appropriations for both HHS and Education, funding options also need additional discussion. We are checking on other HHS authorities for conducting this kind of initiative, but have not yet found one that would be appropriate.

In addition, as part of challenging the best minds in the country, we propose that the President issue a specific challenge to the Round I Challenge Grant recipients to adopt as a partner a pre-school program for low-income children -- a Chapter I pre-school program (now Title I), a Head Start program, or a child care program. It would charge these groups with the responsibility for making sure that opportunities for every child to have a "world class education" begin early and extend to the low-income pre-schoolers in their communities. Many of the Round I Challenge Grants will bring together technology groups, cultural institutions, and schools to create exciting new partnerships in communities as well as new learning opportunities for children. We would like to see these grantees promise that young children and early childhood programs in their communities, particularly those who serve low-income children, won't be left behind.



U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
THE SECRETARY
WASHINGTON, D.C. 20410-0001

October 23, 1995



TO: President William Clinton
Vice President Al Gore

FROM: Henry G. Cisneros

9-17-66

SUBJ: Creating Economic Lift in Public Housing through Technology and
Education Partnerships

I am pleased to share with you an exciting new initiative we have named, "Campus of Learners", being developed by the Department of Housing and Urban Development. The goal of the new initiative is to transform selected public housing developments in cities across the nation from dead end projects to campuses where every resident is pursuing educational opportunities. This initiative recognizes the importance of an education-oriented "contract" between residents and each campus, whereby residents agree to enroll in an education program as a condition of living on campus.

The Campus of Learners initiative combines private and public sector resources by incorporating education, technology and job training opportunities in public housing developments. Through creative partnerships with school districts, universities, community colleges, and corporations, the Campus of Learners initiative will transform public housing developments from places that are often physically, socially and economically separated from mainstream society into electronic and education campuses for the 21st century.

In addition to the Department's allocation of resources, cities such as Atlanta, Hartford, Denver, South Bend, New Haven, and East St. Louis have secured commitments from the private sector, local school districts and universities to implement the Campus of Learners initiative within eighteen months.

Funding for this initiative is coming from a number of existing HUD resources. Public housing agencies, for example, are using capital funds for rehabilitation and redevelopment to construct Campuses of Learners. I am hoping to expand existing efforts markedly in FY 1996. The Senate FY 1996 appropriations bill contains \$500 million for a major initiative designed to demolish and redevelop some of the nation's worst public housing projects. If appropriated, the Department will use these resources to implement the Campus of Learners initiative. The Department has identified the Senate initiative as one of our highest priorities for the upcoming VA/HUD appropriations conference.

On October 24th, representatives from the aforementioned cities, TeleCommunications Inc. (TCI), universities, and several housing authorities will meet in Washington, D.C. to

exchange information about the campuses under development in their communities. On October 30th, the Campus of Learning initiative will be discussed at the Domestic Policy Council's bi-monthly meeting coordinated by Carol Rasco. On November 1st, Secretaries Reich, Riley, Brown, Shalala and I will explore ways to bring additional federal resources to the initiative.

The "Campus of Learners" initiative advances important goals of your domestic agenda:

- to establish centers of education where residents are admitted to a Campus of Learners based on their willingness to participate in an education program of some kind.
- to replace the isolation that fosters permanent dependence with connections that encourage self-sufficiency.
- to inject an education ethic into inner city communities.
- to equip residents with the education and computer skills necessary to compete for new jobs.
- to change the perception of public housing as a dead-end to a platform, or launching pad, for an independent life.

Key elements of the Campus of Learners initiative include the following:

- *Build Physical Campuses for Learning and Living:*
Create new human scale safe living environments that integrate schools, parks, community colleges and universities. Use architecture, landscaping, fencing, and access points to build livable human scale developments and replace the traditional street system. In short to build identifiable campuses where there are now only "projects."
- *Integrate Area Schools into Campuses of Learners:*
Schools will be physically incorporated into the campus plan to ensure access and security. Public Housing Authorities will work with local school districts in development in curriculum development, parent-teacher relationships, after-school activities, and adult education classes.
- *Partner with Universities:*
Harness the resources of universities, vocational, technical institutes and colleges through specialized education and technology classes, share computer hook-ups, mentoring programs, and student-supported housing in the development. Some faculty members will be invited to live "on-campus" and act as academic advisors.

- *Provide Access to Technology:*
Wire every unit in the Campus of Learners site. Computer lab sites on campus will be available for computer classes, language skills, life skills training, and GED classes to accommodate the schedules of working mothers, children and the elderly.
- *Encourage Private Sector Sponsorship:*
Encourage corporate sponsorship of the local Campus of Learners sites, including job training and employment opportunities, mentoring for children and adults, telecommunications resources, and youth sports programs.
- *Provide Education and Learning for Residents of all Ages:*
Enrolling in an education program of some kind will be a requirement to live on campus. All residents, children, adults, and senior citizens, will have access to education in nearby schools and campus education centers.
- *Foster Employment Opportunities:*
Partner with local businesses for job placement and opportunity for residents who complete adult education training, computer programs, or other programs.
- *Create Safe Communities:*
Design apartments and living centers with an emphasis on safety and limited access. Extend "boundaries" of public housing to nearby schools, community colleges and universities.
- *Change the psychology of public housing as a permanent residence:*
Emphasize the importance of inner-city education and job training as critical rungs in the ladder of economic opportunity. Churches, businesses and volunteer organizations will establish strong mentoring/leadership networks.

Examples:

*The North Lincoln Homes Campus of Learners
Denver, CO*

A unique public/private partnership between the Denver Housing Authority, TeleCommunications, Inc.(TCI), the Community College of Denver, Denver University, and the Denver School District will provide a network of educational resources, streamlined access to family services, and viable employment and training programs to transition North Lincoln's public housing residents off public assistance and into self-sufficiency. All 206 apartments in North Lincoln Homes will be designed and constructed with computer wiring bringing technology into the homes of lower income Americans. In coordination with TCI, access to high technology computer learning services will be provided at an on-site Family Learning Center at North Lincoln Homes.

*The Charter Oak Campus of Learners
Hartford, CT*

The Charter Oak public housing site is transforming a place of partially vacant apartment complexes to a comprehensive learning and living center. Mayor Michael Peters is working with the Hartford School District, Trinity College, and others to wire all of the units in Charter Oak, to expand the traditional boundaries of the development to include nearby elementary and technical schools, and to offer adult education opportunities to residents.

*"Housing University"
South Bend's Campus of Learners*

The South Bend Housing Authority is establishing a "Housing University" for all public housing in South Bend designed to assist residents to empower themselves through self-sufficiency. The Housing University will network with area schools, community centers, service agencies and churches. Families will develop an individually tailored education and training program called a "Family Empowerment Plan." South Bend has developed technology partnership with the Community Learning and Information Network, and the Technology Lab 2000 to provide technology access for all residents. In addition, nearby schools and on-site computer centers will provide a technology-enriched curriculum for all residents with classes in K-12 for children, and child care, life skills, employment skills for adults, as well as, teenage pregnancy counseling and conflict resolution for youths.