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REAUTHORIZATION MEETING

November 1, 1998 11:00 am - 3:00 pm

Attendees: S. Betka, S. Cook, T. Corwin, T. Dozier, S. Fleming, J. Johnson, C. Jovicich, T. Kelley, M. Moran, A. O'Leary, V. Plisko, M. Smith, D. Stevenson, G. Tirozzi, S. Wilhelm,

I. TEACHER QUALITY - Key Discussion Issues

Component A: Implementing Standards in the Classroom
Component B: Grants to Support Model Teacher Quality Effotrts
Component C: National Activities

Implementing Standards in the Classroom/Accountability provisions.

- Major accountability provisions would include report cards on teacher quality, development of performance indicators, and development of systems to reward good teachers and remove poor teachers.
- Few states currently have performance indicators to measure teacher quality.
- Current legislation in Eisenhower program - does reading and math conflict?
- We need to focus on student needs.

Supporting model teacher quality efforts

- Push non-traditional professional development; data through fast response
- There needs to be opportunities for cross planning;
- Pushing schoolwide programs, school base decision making, rather than individual teacher development (i.e., college course work, conference expense reimbursement, etc.)
- Proposal emphasizes working with an authentic team, and mentoring teachers
- From the Apex Study we've learned that teacher quality activites are more effective when implemented in the context of the natural environment of the school.
- Eight priority emphasis will be on low performing schools.

Funding Issues

- Having a set-aside for professional development in Title I would be targeted.
- We need to walk the line between reality and leadership.
- In order to put any programs together - we need a coalition - (i.e., Chiefs, National School Boards, etc.
- Portions of the proposal will not need a lot of money. For example, the simple step of having a teacher observe another teacher would take very little money.
- We need to think of the content of Title I, set-aside. Lessons learned from last reauthorization. There will probably be more support for this approach.

Alternative Certification Issues

- This is a real source of vigor for many schools
- No professional certificates, no emergency certificate
- Our goal is well-trained teachers, and goal practicing teachers. Colleges are going to fight alternative certification. We need to distinguish between emergency certification and alternative certification.

General Framework: Two larger options: (1) Consolidate Goals 2000, Title VI, (2) Keep Title II

- We need to be cautioned that Title VI may become a big block grant. Hard realities on the Hill makes it difficult to combine programs.
- Teacher quality is more sellable on Hill.
- We're not abandoning goals, we are moving into next phase.
- This agenda needs to continue - perhaps focus and teacher quality and standards.
- We could fold Goals, Title II, and Title VI into teacher quality.
- If we could figure out way of getting proposal out there using current programs.

DECISIONS/ACTION ITEMS - Teacher Quality

- Prepare and disseminate lots of models and examples. We can implement models immediately, and develop a public voice as to what constitutes good thinking. How do we get good information out to teachers? (I.e., George Miller, proposed out of field amendment, passed committee, yet home school lobbyists influence the defeat of amendment.)
- Give districts examples of ways of implementing out-of-field. (I.e., science, performance licencing.)
- Do serious negotiating over the next three weeks with CCSSO, NSBA, etc. and bring these groups into the plan. (I.e. 15% of funds used in Title VI for improvement. We haven't asked for money in Title VI, but it is funded anyway.
- We need to focus and sell the vision. The selling point of Goals 2000 and Title VI is flexibility. * How do we get major education groups on board? We need to get out the vision of consolidating Goals 2000, Title II, and Title VI. The right question is what vision do we want to get out there? We need a story to tell as to how this money will work together r. However, the States still need some money to keep there standards going, etc. There used to be a spareate set-aside for states (i.e. Title V); the States no longer have that.
- We need to move to the second generational question on teacher quality: (1) Quality teachers, (2) Professional Develpment, (3) Standards, (4) State Reform, (5) Title VI
- There must be some Title VI flexibility. Title VI could focus on technolgoy and teacher development. Title VI is also flexible. How do we know if we have a good teacher when we have it? Proposal for the teacher quality formula grant to states does talk about charachteristics of effective teaching.
- Over next ten years we need 2 million new teachers. What if there was a National Teacher Certification Board? It could be state based, and should have the same cut-off score. Praxis test now issued by several states have different cut-off scores in different states -

leading to extensvie inconsistencies in measuring teacher quality.

- ✏ Include clarifying definitions in legislation re emergency certifications, etc.
- ✏ We have to talk with some of the educaton groups re placing the different programs together. We need to do it in such a way as to get agreement.

II. PRINCIPAL LEADERSHIP - Key Discussion Issues

Intent and Scope

- 2 programs are envisioned: (1) funding of states, and (2) funding a national competition.
- breadth of role i.e., shared responsibility.
- Perhaps the intent could be based with other school based programs - i.e., CSRD.
- Get literature from OERI re school principal leadership
- Mutual support is important. High school principals, in particular, need instruction, support, and networking.
- Networking and collaboration, sharing solutions are important for principals.
- If set-asides are established it will diminish funds for the intended programs.
- This needs to be additional money, or someown will lose a job or be replaced..
- Many principals are not aware of new studies, such as important reports on brain research, NAS study on reading, etc..
- We want to send a national message that principal need to know updated issues on curriculum and instruction.
- We're actually understating the problems faced by principals: they're on call 24-hours a week, seven days a week; very high turnover rates; there is much difficulty recruiting principals for urban areas, individuals experience increasingly high stress levels, etc.

DECISIONS/ACTION ITEMS - Principal Leadership

- ✏ Clarify funding options.
- ✏ Who do you want to deliver services? Who are the right institutions, Work throught strategy and coordinate with teacher quality and pirincipal leadership.
- ✏ Review OERI's 13 models for principal leadership.
- ✏ Get information out re teacher quality and principal quality in numerous publications - i.e.. NEA newsletters. Get Secretary to talk about both principal quality and teacher qualtiy. Get information out into major education publications - i.e., Education Leadership, Phi Delta Kappa, etc.
- ✏ Can have teacher quality linked with principal awards. It would be good to have principal leadership money for school systems - priority/targeting (i.e., TCLF, Title II go to alternative schools because they receive Title I funding.)

III. STANDARDS, ASSESSMENTS, AND ACCOUNTABILITY- Key Discussion Issues

- Standards, assessments, and accountability is one of the most important part of the whole law.
- Role of external partners, trend have been made
- Do we promote continuous improvement, or do we focus on low performing schools?
- Low performing schools - how do you attract teachers?
- School improvement - Title I provisions on Correction Actions do not have to be in place until States have in place final assessments.
- 17 states have final assessments, but the Department has not been informed. This was reported to CCSSO.

DECISIONS/ACTION ITEMS -Standards, Assessments, and Accountability

- ✏ NAS study on reading should be put in final legislation. Standards and assessments all is reading, LEP, and national test.
- ✏ We need to come up with cost estimates. The idea of state teams is not a bad idea, but we need money. We're probably not going to get a separate line item in statute..
- ✏ We need to look at where we are in supporting state capacity. We need to work it out strategically and get by-in with chiefs, school boards, etc. 95% money to classrooms.

Additional handouts:

1. District Response to State Accountability Systems, by Margaret Goertz.
2. Accommodation and Conflict: The Implementation of Chicago's Probation and Reconstitution Policies, by Kenneth K. Wong.

IV. TECHNICAL ASSISTANCE
Key Discussion Issues

Effectiveness of current ED technical assistance efforts

- We don't have good evaluation information.
- 3 options: SEA capacity
- We need to look at purpose and focus.

Purposes of ED technical assistance

1. Obey-Porter was not in paper, and cannot stand alone; Obey Porter model is currently one of the strongest technical assistance models.
2. We can now reach all 95,000 schools through technology.
3. Everything we're trying to do in the Department. ED staff will need to increase their roles of technical assistance providers. (I.e., front/back office. We could recognize this role as part of our mission..)
4. Fast evaluations - i.e., Obey Porter. Formative evaluation as technical assistance. We should be able to tap into other technical assistance providers. I.e. SEAs - we're

Thinking through what we can contribute

- We need to consider benchmarking, thinking nationally, and more broadly
- Information has to put the direction to places, people, etc.
- Ultimately someone has to build capacity in classroom.
- front office/back office -- OERI, PES as backroom producers of information for ED technical assistance.
- The ED web site is one of the best in government and extensively used.
- We need to expand such things as video conferencing - i.e., OVAE and PES have good models. Also, Chiefs have indicated that is what they have to be.
- It would be ood to get some updated informatin together and think about 3 years out into the future. We need to build the future into some of the current thinking. Futuristic thinking could significantly change our current provisions of labs, comprehensive centers, etc.
- We should be ablé to respond accurately, appropriately, and immediately to questions.
- What is the goal? We have a consolidated system with in a fragmented system. We currently cannot articulate a relationshiop among labs, comprehensive centers, etc.

You answer the phone, no matter who calls!

* Senator Jeffords Hearings are coming up:
  * November 17
  * December 11 Literacy

DECISIONS/ACTION ITEMS - Technical Assistance

- Next steps for technical assistance:
  1. We should rethink and redefine delivery system.
  2. Define how the Department is changing its technical assistance charachter - especially with the new emphasis under Obey-Porter.
  3. Extend providers role
  4. Research is the basic model of technical assistance.
- Bring lead writers together table about technical assitance. Check with Kirk and Val
- We need to get things right.
- **Unified approach** - We want to tell a story - something to give people:
  1. Stay the course on standards and assessments
  2. Provide incentives.
  3. Focus on students most in need.
  4. Address second wave of reform from the state house to the school house with an emphasis on professional development.
  5. Develop up-to-date information to support reform and integration with the clasroom.
- The more we can retain our priorities, the better.
- We need to be prepared for upcoming research studies and reports coming out

questioning the effectiveness of Title I.

- We're focusing Title I on teacher quality and accountabilitiy.
- We're continuing serious reform on state standards and focus on what we've learned., i.e., choice, teacher quality.
- What are we going to do about Goals?

Technology for Education – Summary Paper

INTRODUCTION

Technology – meaning computers and internet access – is a powerful learning tool when used well as part of the daily business of teaching and learning. Technology is nearly ubiquitous outside schools and familiarity with it is becoming essential to good employment. In the context of schooling, using technology well means not only familiarity, but making a significant contribution to improved student achievement on State content and performance standards. Our goal for the Nation is to help develop the best and highest level of use for technology in schools and see that level of use become common throughout elementary and secondary education. The four pillars for educational technology support this goal.

However, achieving the goals of the four pillars is beyond the scope of federal funding. Thus, we must encourage strategic use of Federal resources to leverage and stimulate other funding, to substantially increase our knowledge about new and effective uses of technology, and to make sure that advancing the use of technology in schools does not contribute to further divisions in society.

Technology is particularly powerful in reducing the barriers between rich and poor students, but only if access to technology - used well - is readily available. Our particular goal for this reauthorization and the funding we provide, then, is to:

- Accelerate the development of innovative strategies, tools, and applications leading to gains in student performance against challenging State content and performance standards, and
- Ensure the spread of educational technology to those schools where its power as a learning tool and equalizer is most needed – the same schools targeted by Title I's school-wide projects and the Schools and Libraries Corporation 80 percent level of subsidy.

Specifically, we are proposing to:

- Retain technology as a separate title since nowhere else in ESEA is technology explicit. Technology has been a catalyst for change, particularly with respect to achieving high standards, improving teaching, motivating disadvantaged learners, and reaching high need communities. To not leave as a separate authority now would be to send the wrong signal;
- Better coordinate Federal educational technology efforts;
- Strengthen the targeting provisions in the Technology Literacy Challenge Fund to continue to reduce the disparity between technology-rich and technology-poor districts while also, providing States with greater discretion to designate the type of recipients and priority for remaining funding to develop better services to benefit students in high poverty schools;
- Consolidate the current educational technology discretionary authorities -- Star Schools, the Technology Innovation Challenge Grants (TICG), the Regional Technology in Education Consortia (RTECs), and the FY '99 programs under the leadership authority into a single discretionary authority and to do so in such a way as to discourage setasides and earmarks;
- Encourage a greater investment in human resources. Technology training for teaches must continue to be high priority since less than half of current of teachers (only 43%) have enough skills to use a variety of applications in their teaching;
- To repeal unfunded authorities and the Telecommunications Demonstration Project for Mathematics. (We have not recommended disposition of the Ready-to-Learn Television authority.)
- As part of the OERI reauthorization, to authorize research targeted to educational technology and

learning, especially applied research on how adults and children learn using technology.

BACKGROUND/PURPOSE

Since 1995, we have made significant progress towards meeting the four goals especially, even prior to the advent of the E-rate, the pillar goal for classroom connectivity. But research, although inconsistent, suggests that progress, even with connectivity, may be leaving some districts, schools and students behind. Among the four goals, two (the first, concerning professional development and support and the last, concerning software and integrating technology into the curriculum) have received less emphasis in the effort to establish the presence of technology in schools and require fresh commitment and focus.

It is important to remember while considering these options that the Federal investment, excluding the E-rate, is relatively small in all but the most expansive of the options considered below. Consequently leadership, leverage, links among program elements, and focused funding are essential to maximizing effectiveness.

To accomplish our goal – to see the best uses of technology for education become common place -- the educational technology programs administered by the Department should have as their overall purpose to **support innovation and other activities leading to gains in student performance against challenging State content and performance standards and to help reduce inequities in the distribution and effective use of educational technology.**

This purpose will be achieved by a combination of several strategies:

1) expand and integrate technology use in teaching and learning, especially in classrooms in schools with the greatest need;
2) demonstrate and disseminate effective models of technology usage;
3) develop better, more effective applications in critical need areas; and
4) build the capacity of States and low-income districts to use technology well and to develop cost-effective strategies.

1)

1. *THRESHOLD QUESTION: INFRASTRUCTURE* : Should there continue to be authority to provide funds for equipment, software, and telecommunications?

Recommended Option

While access (to telecommunications at least) has expanded in schools and classrooms, classroom access and hardware in poorer schools lags behind the national picture.

The administration's commitment to the Technology Literacy Challenge Fund, which has been the primary federal source for funding for equipment, software, telecommunications, and technology-related professional development, has been repeatedly expressed as $2 billion over five years. Fiscal year 1999 is the third of five years; in three years, $1.05 billion has been appropriated for the TLCF. <u>According to the current schedule, fiscal years 2000 and 2001 would take place under the reauthorized statute</u>.

The Department's discretionary educational technology programs have also supported extensive hardware investments. In the case of the TICG, some believe that innovative approaches developed by recipients could not be carried out without expensive equipment and that very few schools, particularly poor schools, could replicate their accomplishments without special funding.

We recommend that as we continue to support funding for equipment, software, and telecommunications, we also strengthen the targeting provisions so that funds are directed to districts and schools where disparities are the greatest and further investments continue to be needed, and that we limit the amount of discretionary funds used for equipment to focus on professional development and on-going support. Although the E-Rate will help pay for on-going telecommunications cost and inside wiring for the poorest schools, it is only 15% of the total cost.

We believe that current statistics and research and the lack of specific targeting provisions indicate this need to shift the focus of Federal educational technology programs to ensure that access is made available to students in low-income areas; to ameliorate differences arising from differences in home access; to bring a focus on uses of technology for higher-order thinking to low-income schools; and to bring innovation earlier to low-income schools.

2. *TARGETING*: How can greater equity in educational technology best be achieved? How would funds be distributed? How would the program be targeted?

Recommended Options

Current targeting provisions in TLCF, TICG, Star Schools, R-TEC's are relatively weak. In looking at targeting we considered both targeting recipients of awards and the strategies and purposes of awards. Both the proposed State formula program and consolidated discretionary program would do both in some measure, but the emphasis would be different. The State formula grant program (TLCF) would target a substantial part of the funds to low-income districts and schools; the proposed discretionary grant program would make development and providing access to innovation for low-income schools and districts a priority.

A. Explicitly target TLCF program funds to districts and schools with the largest number or percentage of children in poverty and demonstrates the greatest need for technology. Unlike the current authority, the new statute would include a definition of high poverty. The revised statute would maintain the current language that grants are of sufficient size and duration to have a substantial impact on student learning. Requirements for State and local technology plans would be retained, with the added provision that plans be renewed at least every three years.

Funds would continue to be distributed to States in proportion to each State's share of funds under Part A of Title I of the ESEA. The 5 percent limit on a State reserve for administrative funds would be retained. States would award funds competitively within the State, and each State would be required to distribute 65 percent of funds to the districts in the top quartile for students eligible for Title I. Funds would benefit schools within districts in the top quartile that

are implementing schoolwide projects.

States would have greater than current discretion over remaining funds (30 percent), but the purpose would be to benefit the same types of districts and schools. Funds would remain targeted to improving classroom instruction, but States would be free to design subgrant competitions and designate subgrantee types other than LEAs in order to develop model programs, practices, and products aimed at meeting State educational technology and learning goals in the targeted and similar districts and schools.

B. Target the discretionary grant program to require that eligible recipients, beneficiaries of services, or the site for an activity be defined for a particular competition so that appropriate attention is given to underserved communities.

3. *RESEARCH*: How should research on educational technology be supported and integrated?

Recommended Option

OERI's current research authority does not specify research into educational technology as a part of the purpose of any of the Institutes. We recommend that a more explicit authority for research into the use of technology for teaching and learning be part of the reauthorization of the Educational Research and Improvement Act. Consequently, no new research authority would be needed under the ESEA. However, the following are non-legislative recommendations to be considered:

- *Create an interagency and Department-wide research agenda for educational technology.* In doing so, it is critical to consider research already being done by other agencies. Consider as a model the proposed Interagency Research Initiative (proposed but not funded in the FY 99 budget). This program would have conducted comprehensive research, coordinated by multiple agencies, to study how children learn reading and mathematics at various ages, and how technology contributes to the learning process, through a series of grants. The Department has begun to collaborate with NSF and NICHD on developing an interagency research agenda.

- *Emphasize frequent interaction with State and local educators throughout the research process.*

- *Make findings accessible to educators and developers. Emphasize ongoing work with teachers on using research.* This should be emphasized within a research authority in OERI Reauthorization, as well as through a discretionary authority providing for dissemination and technical assistance.

4. *NATIONAL PROGRAMS:* How can we support the development and implementation of models of effective and innovative practices?

Recommended Option

The Department has an important national role in promoting high-quality, effective uses of educational technology. We recommend authorizing a single discretionary grant program that combines the strongest features from the current programs (Technology Innovation Challenge Grants, Star Schools, and R-TEC's). These programs have very similar goals and authorities.

By combining these programs into a single discretionary program it would allow for the following activities:

- Innovative Applications: Stimulate the development of creative new applications of technology to propose and test bold approaches to answer nagging education and governance questions and educational problems and focuses on promising applications in critical learning areas such as math, reading English as a second language and science.
- Scaling Up Effective Practices: Provide services to ensure effective implementations of educational technology become prevalent, and specific innovations of promise are rolled out and adapted on a large scale, with particular attention to benefiting those most disadvantaged.
- Access to Content: Provide high-quality information and services through distance technology for multiple audiences within the education community, with particular attention to benefiting those who otherwise lack access to such content.
- Link to other high technology development, such as Next Generation Internet and Internet 2.

In all of these activities, there would be an emphasis on multi-state involvement, rigorous evaluation, and dissemination of models. The new authority would incorporate the flexibility, peer review, and evaluation provisions that are found in the current Star Schools authority. Its primary purpose would be **to improve student learning (against State content standards) through high-quality and effective uses of educational technology**. In keeping with the overall purposes of ESEA, an underlying framework of all such competitions would be a strong focus on benefiting underserved communities.

Eligible entities under this authority would not be limited to LEAs. The authority should provide the flexibility to award grants to States, IHEs, non-profit organizations, and other business and for-profit entities, as long as these applicants can demonstrate: (1) partnership with LEAs as defined for the purpose of targeting State formula grant funds; and (2) that the project will directly benefit those LEAs.

- **5. *BUILDING CAPACITY*: How can we scale up effective practices beyond isolated examples? How can we ensure that professional development and assistance in planning, implementing and evaluating projects is useful and accessible? How can we increase the capacity of targeted schools to use this assistance well?**

Recommended Option

Require a setaside for educational technology in consolidated authority: Embed professional development for educational technology in a cross-cutting teacher quality authority. A

mandatory setaside for professional development for technology would be triggered in the proposed teacher quality authority if a district targeted under the State formula technology authority used State formula technology funding (the 65 percent) for equipment, software, or telecommunications. The setaside would be waivable if a district receiving State formula technology funds for equipment, software, or telecommunications could demonstrate that sufficient professional development in the classroom use of educational technology was provided from other sources. Professional development regarding educational technology would continue to be supported under the recommended technology consolidated discretionary grant program

and under that part of the State grant program (the 30 percent) over which States would have increased discretion.

To supplement these activities, substantial funding under the proposed consolidated discretionary grant program would also be devoted to activities aimed at scaling up successful practices. Such activities could include building better links between research and practice; promoting multi-state and other partnership activities, particularly networks between state and local technology coordinators and technical assistance providers; and working with all levels of school administration to implement models of effective practices, with a strong focus on activities to benefit schools in low-income communities. This component of the discretionary program would work closely with the consolidated professional development program to ensure that schools' technology needs are met, in a manner to be determined. (See *National Programs* for a description of this part of the proposal.)

The approaches to building capacity we have considered include a continuum of services that include professional development and technical assistance for all major stakeholders involved in K-12 education. Again benefits are to focus on impacting the same districts and schools as the State Grant program described in the discussion of targeting earlier in this paper.

The current TLCF and TICG authority explicitly permits the use of funds for professional development, both in projects (3134(2)) and as a means of integrating technology into the curriculum and as a factor in long-term planning for technology (3134(4)). Local educational technology plan provisions for the TLCF (3135) require districts to ensure ongoing, sustained professional development for teachers and other education personnel; district plans are to include a list of sources of training. There is, however, no explicit mention of preservice professional development in educational technology. Awards may be made only to local educational agencies, and although consortia including institutions of higher education are explicitly authorized, their purpose is "to provide services for the teachers and students in a local educational agency...".

Current policy calls for a substantial part of the Department's funding for educational technology to go to professional development. States are being encouraged to use at least 30 percent ($127.5 million) of their TLCF allocations for professional development. In sum, of the $698 million appropriated for educational technology for 1999, about $233 million, or about 33 percent, is to be used for professional development, including $75 million for preservice. These funds represent a substantial investment that we must ensure is well used.

Within the TICG program it is difficult to identify how much is used for professional development, although the 1998 competition set a priority for professional development. We believe that it plays a relatively small part in the early stages of projects and later becomes a more prominent activity. Within the Star Schools program, professional development and direct support for teachers in the context of their classroom has been growing over the years. While the statute requires that 25 percent of the funds be devoted to instructional activities, the last analysis done showed that 40 percent was used for instructional programming and the trend has been to greater spending in this area. Some 60 percent of RTEC services are deemed professional and leadership development and 25 percent technical assistance. Over 40 percent of their products support professional development activities, 25 percent technical assistance, and the remainder general dissemination.

Title II of the Higher Education Act permits the use of funds for teacher preparation in the use of educational technology, and the 1999 appropriation provides a total of $75 million for these authorities (this is in addition to the $75 million provided for preservice and educational technology). The Department does not currently plan to devote HEA funds to educational technology, but given the HEA authority, seeking additional authority for preservice education could be perceived as duplicative.

In considering the necessary factors to building capacity, we also considered the role technology itself could play in delivering services, and in supporting new work paradigms in schools. Two considerations emerge: the merits and opportunities that should not be missed and should be expanded, and also the lack of knowledge to date, particularly in the most disadvantaged communities, about how to use the available technology effectively for multiple purposes. It is important to remember that while technology itself can occasionally act as a change agent, usually it must be accompanied by other organizational change efforts that utilize direct involvement with those users affected by the technology (Markus 1988 & 1997; Thatch 1995; Manson 1973).

Other reauthorization teams are considering options for professional development and technical assistance. The options recommended below may need to be reconsidered in the context of those groups' recommendations.

TO: Mike Smith
FROM: Linda Roberts
DATE: December 21, 1998
RE: Proposals for ESEA Educational Technology

As a follow-up to our meeting on December 17, we have prepared the following:
(1) Proposal #1: Maintaining Educational Technology as a Separate Authority;
(2) Proposal #2: Integration of Technology into the *Supporting School Reform* document; and
(3) Consolidated Discretionary Grant Authority.

After conducting an analysis of our options, I believe that Proposal #1 offers the greatest success for us to meet our educational technology goals in the short-term and move toward long-term integrated school reform. We have also prepared a revised version of *Supporting School Reform* with technology integrated throughout (Proposal #2). An integrated approach will only be possible if technology is sufficiently addressed as an integral part of any reform legislation.

As discussions move forward and decisions are made, we would like to be fully included in the process.

PROPOSAL #1: Educational Technology Remains a Separate Authority

Achieving the Educational Technology Goals: The President's Technology Literacy Challenge established four national goals for educational technology (connectivity, hardware, professional development, software). Although we have made significant progress on these goals, especially in the area of connectivity, we are far from fully achieving all of these goals. If we prematurely move toward integration, the Administration's commitment to preparing our students for the 21st century is potentially lost. In order to continue to promote accountability and make measurable progress on meeting these goals, we need to maintain national leadership.

The Nation's Progress on the Four Goals			
Connecting all classrooms to the Internet	Equipping all classrooms with modern computers	Preparing all teachers to effectively integrate these new technologies into the curriculum	Developing engaging software and content to help all students meet high standards
• Nearly 80% of all K-12 schools • 275 of instructional classrooms * NCES, October 1997	• 13 students per multi-media computer overall • 17 students per multi-media computer in the classroom	• One out of five teachers regularly use advanced telecommunications for instructional purposes • Only 43% of teachers have enough skills to use a variety of applications in the teaching	• No sufficient data

Bridging the Digital Divide: Maintaining a separate authority will enable the Administration to continue to provide leadership in eradicating the digital divide. While our progress on reaching poor and minority communities has continued, the divide between our wealthy and white students is growing at an inequitable pace. It is very possible that a consolidated reform proposal would result in technology being lost to other issues at the school level i.e. discipline/safety. We want to ensure that all children have access to a 21st century education.

Classroom Internet Access: Growing Digital Divide			
	1995	1996	1997
Low Minority	9%	18%	37%
High Minority	3%	5%	13%
Digital Divide	6%	13%	24%
Low Poverty	9%	18%	36%
High Poverty	3%	7%	14%
Digital Divide	6%	11%	22%

Budgetary Success for TLCF: We are moving into a period of stringent budget constraints and budget caps. "We are now in the out years." Tying technology to other programs places these programs at a higher risk for cuts i.e. if Goals 2000 faces cuts, educational technology will likely face similar cuts. For a variety of reasons, the Technology Literacy Challenge Fund is popular and has fared well in the budget since its launch in 1995.

Budget Comparison of Goals 2000 and the Technology Literacy Challenge Fund **Dollars are in thousands			
FY	Requested	Actual	Difference
'94			
G2K	$420,000	$105,000	75%
TLCF	N/A	N/A	
'95			
G2K	$700,000	$371,000	47%
TLCF	N/A	N/A	
'96			
G2K	$693, 000	$340,000	51%
TLCF	N/A	N/A	
'97			
G2K	$476,000	$476,000	--
TLCF	$250,000	$200,000	20%
'98			
G2K	$605,000	$466,000	23%
TLCF	$425,000	$425,000	--
'99			
G2K	$476,000	$461,000	4%
TLCF	$475,000	$425,000	11%

Educational Technology Needs to Remain a Priority: Educational technology supporters have continued to be strong advocates for educational technology. Early indications are that they are likely to invest their efforts if educational technology remains independent and focused. They are looking for a clear message from the Administration that educational technology is still a priority nationally and therefore, one that state and local educators maintain.

Integration May Slow Down Progress on Technology Implementation: There is no strong evidence that technology is being effectively integrated into professional development programs. One example is that Title I funds which can be used to integrate technology throughout the curriculum has not taken place. There is a legitimate concern that a broad authority will not ensure that educational technology, especially professional development, will not take place.

Reform is a Good Long-term Strategy: The goal of integration is a good long-term strategy; however, it would be premature to expect that all schools are ready to take this step. Through non-legislative action, we can work with states over the next several years to integrate all of their educational. Legislatively, it would be prematurely to force schools that have limited infrastructure to integrate all their programs. We need to ensure that we maintain the momentum for educational technology.

PROPOSAL #2: Integration of Technology into the *Supporting School Reform* document

Supporting School Reform: Getting High Standards into *All of* our Nation's *21st Century* Classrooms

"We cannot challenge high poverty schools to raise their standards and then shortchange them by doing nothing to help them."

– Secretary Riley, September 1998

Over the past ten-years, States and Districts have focused their reform efforts on defining and improving standards to raise student achievement for ALL students. With the passage of the Improving America's Schools Act and the Goals 2000: Educate America Act in 1994, States were required to accelerate the pace of standards-based reform. To date, all but two states have developed content standards in reading and math and over 20 States have developed performance standards in the same subjects. By the school year 2000-2001, States are required to have standards in place with aligned assessments and a process for disaggregating student data to get a more precise picture of where students are in their learning and what we, as educators, need to do to improve teaching and learning for all students.

To date, States have spent the bulk of their time and resources on developing standards and have spent less time focusing on the importance of professional learning to get standards into the classroom and the allocation of effort or resources that are needed to provide for this ongoing need (Florio and Knapp, 1998). States and Districts need support and assistance to implement standards in order to improve the quality of teaching and learning. Implementation must focus on finalizing assessments aligned to the State's rigorous standards; developing curriculum aligned to the standards; providing professional development around the new curriculum; using student performance data to improve teaching and learning; and, allowing time for professional conversations about student work and how it is aligned with standards (Cohen and Ball).

As a result of TLCF provisions all States have submitted technology plans. Currently, about half the States are already revising their plans so this is an opportune time to start encouraging them to integrate technology to their school reform efforts.

States and schools have also begun to invest heavily in educational technology in the belief that technology can quickly expand the capacities of schools and teachers. Much of this effort is only loosely connected to education reform, despite evidence that technology is best used to support classroom reform (Means, et al, 1997). States and districts are also beginning to use technology to collect and array achievement data (Texas), provide professional development (Ohio), and make resources (including complete curricula) available to students (Virtual High School). Beginning and experienced teachers cite knowledge of how to improve their teaching using technology second only to knowledge of content and performance standards as a need. However, only four States have included technology performance standards as part of their teacher certification requirements.

Reform Proposal – Standards to the Classroom

Provide $1.7 billion to States and districts by consolidating Goals 2000, Title VI, Title II and the *Technology Literacy Challenge Fund* into *one* standards-based reform grant that would support the next

generation of the standards movement – driving standards into the classroom. ED Flex could be authorized through this reform piece to give States ultimate flexibility in getting standards into the classroom.

States would have a single set of purposes for this grant and would be required to submit a consolidated plan. States and districts would be required to show progress on a set of performance indicators. For example:

- Report Cards at State, district, and school-level
- Plan to increase the number of students reading at grade-level
- Progress on TLCF's four goals

State Reform Efforts: States would be awarded the funding from the $1.7 billion grant by formula and would retain 10% at the State level to:

- continue the development and implementation of performance standards and aligned assessments, *including the use of technology to collect data and make results available;*
- develop a demand-driven support infrastructure *that uses technology effectively* to assure that districts and schools have access to technical assistance and information on effective practices to help all students reach challenging academic standards (e.g. regional technical assistance centers, LEA consortia, partnerships with institutions of higher education, etc.);
- develop and/or support networks *that use technology well in* linking teachers, principals, schools, and districts to each other and to other educational resources to develop and share information about curriculum, assessment, and instructional practice; and
- *use technology to provide services to schools and teachers(such as networks and web sites providing curriculum offerings and lesson plans that meet State academic content and performance standards) and develop new ways for technology to support reform Statewide with special attention to assisting low-performing schools.*

Teacher Quality: In order to improve teacher quality, States would be required to use 50% of the funding to award competitive grants to LEAs to improve and reform teaching aligned with student standards. Funds must be used to:

- implement stronger teacher accountability measures (including performance-based assessments, peer review and assistance systems, knowledge and skills-based pay structures, recognition of exemplary teachers, mid-career certifications, *including expert use of technology in instruction*) throughout a teacher's career to ensure that good teachers are being rewarded and supported, and that poor teachers are given the tools they need to improve or be removed from the classroom;
- support on-going, intensive professional development that is focused at the school-level and allows teachers time to collaborate and to learn more about how to improve student work, *including requirements that professional development integrating technology into instruction be intense and sustained*);
- improve recruitment of high-quality teachers through support for alternative certification and merit-based scholarships to college students willing to teach in high-need areas;
- provide teachers with extra support and guidance in their first three years of teaching;
- eliminate the use of teacher aides as instructors in Title I schools;
- provide support and professional development for principals in their role as instructional leaders *including in the use of technology to use achievement information effectively.*

States would be also required to set-aside 10% of their funds to award competitive grants to institutions of higher education or alternative certification programs partnered with school districts to train, recruit, and retain high quality teachers *and ensure that beginning teachers are able to teach effectively using*

technology.
(see attached teacher quality proposal)

Note: Technology will need to be fully integrated into the Teacher Quality Proposal.

Using Technology to Support School Reform: *States would be required to setaside 30% of the funds to support approaches to using technology for reform that move standards into the classroom.*

- *The purpose would be to focus effort using technology on schools furthest behind in achievement, with concentrations of low-income students, and that are attempting schoolwide reform through schoolwide projects. (targeting should be consistent with rest of school reform proposal to concentrate effort)*
- Funds would be awarded competitively to a subset of districts with schools implementing schoolwide projects.
- *40 to 50 percent of the funds could be used for equipment or telecommunications; State would determine priority, applicants would be required to demonstrate both need and prior use of E-Rate subsidies. Based on current data, the overriding need is to bring modern computers and networking capabilities to the classroom. The E-Rate is not covering these costs.*

LEAs would need to demonstrate how the project would complement their overall systemic plan to implement standards in their classrooms. Professional development activities would meet the quality requirements described in the second Teacher Quality bullet above.

UNITED STATES DEPARTMENT OF EDUCATION

OFFICE OF THE UNDER SECRETARY

FEB 26 1999

MEMORANDUM

TO:

Judith Johnson
Mike Smith
Mike Cohen
Pat Gore
Ann O'Leary
Susan Wilhelm
Jack Kristy
Delia Pompa
Sue Betka
Linda Roberts
Val Plisko
Sandra Cook
Carol Cichowski
Rich Rasa
Phil Rosenfelt
Jon Weintraub
Jeanette Lim
Greg March
Jay Noell
Peirce Hammond

FROM: Tom Corwin

SUBJECT: Specifications for Education Technology Programs

Attached for your review are legislative specifications for reautorization of Education Technology programs (Title III of the Elementary and Secondary Education Act.)

The specs would reauthorize, and improve the targeting of, the Technology Learning Challenge Fund; consolidate and reauthorize discretionary technology programs, reauthorize the Regional Technology Education Centers; and update the overall findings and purpose.

Please send your comments to Jim Butler of my staff (FOB6, Room 5C111) by next **Thursday, March 4.** I apologize for the short turn-around time.

Attachment

cc:
Chuck Lovett
Deborah Spitz
Cheryl Garnette
Catherine Mozer
Mary Moran
Leslie Mustain, OMB
Tanya Martin, DPC

Draft Title III Legislative Specifications

Section-By-Section Specifications Based On Structure Of Current Law

Title Name

Current Law: Technology For Education

Proposed Amendment: Retain the current name, if technology programs continue to have their own title.

Section 3101 Short Title

Current Law: Currently, ESEA Title III is cited as the "Technology For Education Act of 1994."

Proposed Amendment: Rename the short title as the "Technology For Education Act of 1999."

Section 3111 Findings

Current Law: The current law lists 15 findings that justify a Federal role in assisting schools and districts to integrate technology into their classrooms.

Proposed Amendment:

- Delete current (1) and rewrite along the following lines: "Technology has the potential to assist and support the improvement of teaching and learning in schools and other settings and to produce greater opportunities for all students to achieve to challenging standards.
- In (3) delete (A) through (D). Rewrite first paragraph to say: "The use of technology in education throughout the United States has been inhibited by the limited availability of appropriate technology-enhanced curriculum, instruction, professional development, and administrative support resources and services in the educational marketplace;"
- Delete current (8) and replace with something along the lines of "Federal support is particularly important in providing access to computers and the Internet to students and teachers in high-poverty schools."
- Rewrite number (11) along the lines of "the Department will continue to play a vital leadership and coordinating role in developing the national vision and strategy to infuse technology throughout all educational programs."
- Delete (13), which discusses interoperability. Interoperability is no longer a major issue.
- Delete (15). This finding has been incorporated into (1).
- Insert new finding (maybe after (10)) that "Girls of all ethnicities consistently rate themselves significantly lower than boys on computer ability and are less likely to enroll in

advanced computer and graphics courses. Therefore, Federal leadership should pay attention to the needs of girls and women related to technological literacy."

Section 3112 Purpose

Current Law: The current law lists 12 purposes for the Technology Act.

Proposed Amendment: Rewrite this along the following lines: Tto ensure that all students are prepared to achieve to challenging State and local standards, it is the purpose of this title is to support efforts by State and local educational agencies to achieve the four goals of the National Technology Literacy Challenge. These goals are that:

- "All teachers in the Nation will have the training and support they need to help students learn using computers and the information superhighway;
- All teachers and students will have modern multimedia computers in their classrooms;
- Every classroom will be connected to the information superhighway; and
- Effective software and on-line learning resources will be an integral part of every school's curriculum."

Section 3113 Definitions

Current Law: Includes 11 definitions.

Proposed Amendment: Delete this section; definition sections will be included in the various parts as necessary.

Section 3114 Funding

Current Law: The law currently authorizes "such sums as may be necessary" to carry out subparts 1, 2, and 3 of which:

-- $3 million is for subpart 1 (National Programs for Technology in Education) if the amount appropriated is less than $75 million or $5 million if the appropriation is $75 million or more;

-- $10 million is to carry out subpart 3 (Regional Technical Support and Professional Development); and

-- The remainder of the appropriation is to be used for subpart 2 (State and Local Programs for School Technology Resources).

The law includes a separate authorization for subpart 4 (Product Development).

The statute requires that, in years in which the amount appropriated is less than $75 million, the amount available for subpart 2 is to be used for National Challenge Grants. In years in which the appropriation is $75 million or greater, the funds are to be used for grants to State educational agencies, except for the amount necessary to meet continuing obligations for National Challenge Grants.

Proposed Amendment: Delete this section. Separate authorizations would be created for each part.

Section 3115 Limitation on Costs

Current Law: Limits the amount recipients of grants may use for administrative expenses to 5 percent.

Proposed Amendment: Delete this section. Distinct limitations on administrative costs would be created in the parts where it is appropriate.

Section 3121 National Long-Range Technology Plan

Current Law: Requires the Department to develop and publish, not later than 12 months after the date of enactment of the 1994 law, a national long-range technology plan. It includes 8 items that are to be included in the plan.

Proposed Amendment: Delete this section, which is now out of date.

Insert Proposed Part A – Federal Leadership

Section 3122 Federal Leadership

Current Law: Authorizes the Secretary to carry out activities to promote the effective use of technology in classrooms.

Proposed Amendment:

- In (a), which lists the entities which the Secretary must consult in carrying out leadership activities, delete the United States National Commission on Libraries and Information Sciences and replace with the White House Office of Science and Technology Policy.
- In (b)(1) delete everything from "in accordance" through the end of the sentence. This deletes a reference to plans submitted under Goals 2000.

- Delete current (c)(1), which authorizes providing technical assistance to technical assistance providers. Replace with language allowing the Department to conduct long-term studies on the effectiveness of educational technology.

- Delete language in (c)(2), which authorizes development grants to technical assistance providers. Replace with language authorizing the Department to convene expert panels to identify uses of educational technology that hold the greatest promise for improving teaching and learning."

- Delete (c)(4), which authorizes research on "interoperability;" interoperability is no longer a major issue for schools.

- Delete (c)(12), which authorizes a biennial assessment and report on the uses of technology in elementary and secondary schools; the Department is conducting assessments and evaluations of educational technology under other authorities.

- Retain all of (d), which authorizes the Department to require a match from grant recipients under this part.

Section 3123 Study, Evaluation, and Report of Funding Alternatives

Current Law: Requires the Department to produce a study, not later than 12 months after the enactment of the bill, on alternative models available to schools for financing educational technology.

Proposed Amendment: Delete section, which is now out of date.

Proposed Authorization of Appropriations Section

Proposed Amendment: For the purposes of carrying out this part, there are authorized to be such sums as may be necessary for fiscal years 2001 through 2005.

Insert Proposed Part B – Technology Literacy Challenge Fund

Proposed Purpose Section

Proposed Amendment: Insert a section containing a purpose specific to the State formula grant program. The purpose would be: To increase the capacity of high-poverty, low-performing schools to provide students with access to educational technology and to assist teachers in those schools to integrate educational technology effectively into instruction to improve teaching and learning.

Section 3131 Allotment and Reallotment

Current Law: This section specifies the formula through which State grant funds are to be allocated among the States. The formula allocates funds to the States on the basis of amounts received by each State under Title I for the previous fiscal year, except that no State may receive less than one-half of 1 percent of the total funding. In addition, this section describes the process

to be used to reallocate any funds should the Secretary determine that a State does not require its full allocation.

Proposed Amendment: Amend the current provisions to state specifically that BIA and the Outlying Areas receive one-half of 1 percent of the amounts appropriated. BIA was defined as an SEA in the definition section of the statute; the deletion of that section requires the addition of BIA in this section. Current law doesn't specify the amount for the Outlying Areas; the Department has had to obtain appropriations language to avoid giving each of the Outlying Areas the full one-half of 1 percent.

Section 3132 School Technology Resource Grants

Current Law: Authorizes the Secretary to award grants to States that have approved technology plans under section 3133. Requires States to award funds competitively to local districts and to ensure that grants are "of sufficient duration, and of sufficient size, scope, and quality, to carry out the purposes of this part effectively." This section also requires States to identify and provide technical assistance to local educational agencies with the highest number or percentage of children in poverty and that demonstrate the greatest need for technical assistance in developing a program application.

Proposed Amendment:

- Rename section "Technology Literacy Challenge Fund," which is the name the Department has used for this program.

Under 3132(a)(2):

- Specify that each State must use at least 95 percent of its allocation for local subgrants to "eligible local applicants" (see below for definition), with the rest available for State administrative costs and technical assistance.

- Provide States with the authority to use up to 1 percent of their allocations to provide grants to eligible districts to help them to develop local technology plans. This 1 percent would come out of the 95 percent required to be used for local grants. The evaluation of the TLCF program found that many districts needed additional financial support to develop their technology plans.

- Specify that awards may be made only to eligible local applicants, or partnerships containing at least one eligible local applicant, for use by those applicants or partnerships to improve the capacity of teachers in high-poverty, low-performing schools served by the eligible applicant to use technology effectively in their classrooms to improve student learning. This targets program funds to districts with the greatest need for educational technology and the fewest resources to meet those needs.

- Require States to give a priority to partnerships that contain an eligible local educational agency and one or more of the following: a local educational agency that can demonstrate that teachers in schools served by the agency are using technology effectively in their classrooms; an institution of higher education; a non-profit organization; a private business; or a museum, library, or other public or private non-profit cultural institution. This provision would provide an incentive for an eligible district to form a partnership with an entity or entities that possess the capacity to assist schools in the eligible district to use technology more effectively.

In 3132(b) change (2), which requires States to provide technical assistance to high-poverty districts, to:

- Require States to provide (from the 5 percent available for State administration and technical assistance) eligible local educational agencies with assistance in: developing applications; forming partnerships for purposes of applying for an award; and establishing performance indicators and methods for measuring program outcomes against the indicators. The current statute requires States to provide technical assistance to high-poverty districts that demonstrate the greatest need for assistance in developing an application. The proposed provision would expand the technical assistance to include help in forming partnerships and developing accountability measure in addition to assistance in developing an application.

Proposed Definitions Section

Eligible Local Applicant: (1) a local educational agency that (a) is among the LEAs with the highest numbers or percentages in the State of children from households living in poverty; and (b) demonstrates the greatest need among districts in the State for educational technology and serves at least one low-performing school; or (2) a partnership that includes at least one such district.

Low-Performing School: (1) a school identified by the local educational agency for school improvement under section 1116(c) of the ESEA; or (2) a school in which the great majority of students fail to meet State performance standards based on assessments the agency is using under Part A of Title I or comparably rigorous State or local assessments.

Section 3133 State Application

Current Law: States are required to submit a statewide educational technology plan that "outlines long-term strategies for financing technology education in the State" and meets other criteria determined by the Secretary to enable States to provide assistance to local educational agencies with the highest numbers or percentages of children in poverty and demonstrate the greatest need for technology. The statute lists 10 activities as examples of the type of activities that LEAs can carry out pursuant to the plan.

Proposed Amendment:

- Require States to submit a new or updated statewide plan to receive fiscal year 2001 funds. Remove "the Goals 2000: Educate America Act" and replace with "other Titles in this act."

- Delete 3133(2), which requires States to meet criteria the Secretary might set to ensure that districts with the greatest concentrations of poverty and demonstrated need for technology receive program funds. In addition, the section lists 10 possible local uses of funds. This section is no longer necessary as the proposed statute specifically limits eligible applicants to districts with high concentration of poor children and the greatest need for technology. The uses of funds described are duplicative of those included in the local uses of funds section.

- Include language requiring each State to describe, in its plan, its criteria for identifying (under section 3132) a local educational agency as high-poverty and having the greatest need for technology and the justification for those criteria.

- Include language requiring each State to describe how it will ensure equitable distribution of grants across districts of varying size and urbanicity.

- Include language requiring each State to set specific State goals for technology; to establish baselines for each of the goals; and to set timelines for achieving the goals. Include a requirement that the State's goals must relate to the 4 national technology goals.
- Include language requiring each State to describe how it will ensure that the grants to districts are of sufficient size, scope, and quality to meet purposes of this part effectively.

- Include language requiring each State to describe how it will provide technical assistance to eligible applicants and its capacity for providing such assistance.

Section 3134 Local Uses of Funds

Current Law: Allows LEAs to use program funds for the following activities:

(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.

Proposed Amendment:

- In the first sentence, after "for", amend along the following lines, "activities such as". The current statute seems to require grantees to fund all 6 listed activities.

- Insert language the amount that any grantee may use for administrative expenses to no more than 5 percent of its award.

- Insert language along the following lines: "Any activities supported with funds received under this part must benefit schools identified by the agency as high-poverty and low-performing. Activities funded under this part may also benefit other schools, but the focus of those activities must be on improving the capacity of teachers in high-poverty, low-performing schools to use technology effectively in their classrooms. This would target funds on the schools with the greatest need for educational technology.

- Delete (5), which authorizes funds to be used for acquiring connectivity with wide area networks. This section is duplicative of (3).

Section 3135 Local Applications

Current Law: Requires LEAs desiring assistance to submit an application to the SEA at such time, in such manner, and containing such information as the SEA may reasonably require. Requires that, at a minimum, the application include:

- A strategic, long-range (three- to five-year) plan that includes:

  -- A description of the technologies to be acquired, including specific provisions for interoperability among the components of such technologies;
  -- An explanation of how the technologies will be integrated into the curriculum to enhance teaching, learning, and student achievement;

-- An explanation of how programs will be developed in collaboration with existing adult literacy services;

-- A description of how the LEA will ensure ongoing, sustained professional development for educators, administrators, and school library media personnel to further the use of technology in the classroom

-- A list of the sources of ongoing training and technical assistance available;

-- A description of the supporting resources, such as services, software, and print resources, which will be acquired to ensure successful implementation of the plan;

-- The timetable for implementing the plan;

-- The projected cost of the technologies to be acquired to implement the plan; and

-- A description of how the LEA will coordinate the technology provided with program funds with that purchased from other funding sources.

Proposed Amendment:

- Insert new (1)(A) requiring districts to describe how they will ensure that funds received under this part are used to increase the capacity of teachers in high-poverty, low-performing schools to integrate educational technology effectively into instruction. This requires districts to describe how they will use Federal funds to meet the purposes of this part.

- Reletter (1)(A) as (1)(B). Delete the language after "acquired" and insert language along the lines of "how the technologies will be integrated into the curriculum, and the support services that the district would provide to schools."

- Delete the language in current (1)(c) and replace with language requiring an LEA to identify its goals for educational technology, and to establish timelines, benchmarks, and indicators of success against the goals. This requirement will help to hold grantees accountable for their use of Federal funds.

- Delete (1)(e), which requires a description of the supporting resources. This requirement is being incorporated above.

- Insert a new (1)(H) requiring, if applicable, a description of the partnership and the governance structure of the partnership.

- Rewrite (2) along the following lines: " A description of how the local educational agency included parents, public libraries, business leaders, and community leaders in the development of the local technology plan."

- Delete (d), which allows districts to form partnerships to apply for program funds. The provisions of this paragraph are being incorporated in other places in this part.

- In (e) delete the reference to the Goals 2000: Educate America Act.

Proposed Maintenance of Effort Section

Proposed Amendment: Insert language along the lines of: "A local educational agency may receive funds under this part only if the agency submits to, or has on file with, the State educational agency an assurance that the agency will spend at least as much funding from non-Federal sources as the agency spent in the previous year for the combination of educational technology and training for educators to use technology effectively in their classrooms." This provision is meant to ensure that local districts maintain the same level of commitment to providing educational technology to schools as they did prior to receiving program funds.

Proposed Authorization of Appropriations Section

Proposed Amendment: For the purposes of carrying out this part, there are authorized to be appropriated and such sums as may be necessary for fiscal year 2001 and for each of the four succeeding fiscal years.

Insert Proposed Part C – Next Generation Technology Innovation Challenge Grants

(This would be inserted as Title III, Part C. It is meant to replace the current sections 3136 and 3137 (Technology Innovation Challenge Grants) and the current Part B (Star Schools).)

Statement of Purpose

Proposed language – The purpose of this part is to *expand our knowledge base about the use of educational technology to improve student learning*, by supporting projects that address questions of national significance, and that *develop models of innovative and effective uses of educational technology for wide-scale adoption by States and LEAs.*

Explanation – The above language describes the purpose of this program.

Grants Authorized

Proposed language – The Secretary is authorized to award grants, contracts, and cooperative agreements on a competitive basis, to consortia of public and private entities.

(a) The Secretary may determine preferences for particular applicants at the time of competition.

(b) Awards may be made for up to five years.

Explanation – This language is designed to allow flexibility in the type of awards and their duration. We want to have the option to award three-year development grants, with an option for a fourth and fifth year for promising projects. (Do we need specific language for this?) We want to keep eligibility for these awards as broad as possible, but also maintain the ability to prioritize certain categories of applicants at the time of the competition.

Proposed language: The fiscal agent of the consortia must be a local educational agency with a high percentage of high-poverty students and low student achievement scores. Consortia members may include local educational agencies, State educational agencies, institutions of higher education, businesses, academic content experts, software designers, museums, libraries, and other appropriate entities.

Explanation: This would essentially maintain the language in section 3136(a)(1), but with an additional emphasis on poor-performing schools. We should consider if we want to target more specifically than this.

Application Requirements

Proposed language - Applications must include a detailed evaluation plan, to be approved by the Secretary, that provides for external evaluation and includes a description of the project's goals, measures of progress, and questions to be answered.

Projects will be required to document not only outcomes, but also the process of development, so that LEAs and SEAs can benefit from their experiences.

Explanation – This language is designed to give greater emphasis to evaluation for the projects funded under this program. It would give us the flexibility to work with projects to improve their evaluation plans.

Uses of Funds

Proposed language – Awards shall develop, adapt, or expand existing and new applications of educational technologies and telecommunications to support school reform efforts, including wireless and web-based telecommunications, hand-held technology, and the development of software and other applications. Funds awarded shall be used for activities designed to carry out the purpose of this part, such as –

1) Teacher quality: provide preservice and inservice professional development in the integration of quality educational technologies into course curriculum.

2) Product/content development: develop high-quality, standards-based content software and instructional programming.

3) Access to technology for underserved populations: use telecommunications and other technologies to make programs accessible to low-income students, students with disabilities, students in remote areas, students with limited-English proficiency, etc.

4) Parent education and community access and involvement: provide educational services for adults and families, particularly parent education programs which reinforce a student's course of study and actively involve parents in the learning process.

5) Equipment/connectivity: acquisition of connectivity linkages, resources, and services, including the acquisition of hardware and software, as needed to accomplish the goals of the project.

6) Collaboration with other Department technology programs, particularly the regional technology in education consortia and the State formula grant program.

Explanation – This language specifies how funds may be used.

Priorities

Proposed language –The Secretary may establish priorities consistent with the objectives of this part, including the following:

1) Projects developing innovative models of effective uses of educational technology, including the development of software and online resources.

2) Projects that build the capacity of States, LEAs, and schools to use existing educational technology resources.

3) Projects providing multi-State services and resources, by a consortia of SEAs, LEAs, and other public and private entities.

4) Projects developing innovative models for improving teachers' ability to integrate technology effectively into course curriculum, through sustained professional development in both preservice and inservice education.

5) Projects developing innovative models that serve traditionally underserved populations, including low-income students, students with disabilities, students with limited English proficiency, etc.

6) Projects that demonstrate that members of the consortia or other appropriate entities will contribute substantial financial and other resources to achieve the goals of the project.

Explanation -- The language above is designed to give the Department the flexibility to determine specific priorities in each competition, and to minimize rulemaking by setting out a list of optional priorities that can be used each year.

Evaluation Activities

Proposed language – The Secretary shall develop procedures for State and local evaluations of the programs under this part. (section 3137(a)) The Secretary may reserve up to 5 percent of funds available under this part for the activities described in this section.

Funds may be used to conduct independent evaluations of the activities assisted under this part and of educational technology in general, including assistance to grantees and dissemination of findings, as well as other activities that contribute to the development of models and their implementation.

The Secretary may award, on a competitive basis, grants or contracts to conduct the activities described in this section.

Explanation – This language will allow the Department to fund, up to 5 percent of available funds, one or more grants or contracts for external evaluation of all of the projects funded under this program, in addition to broader analyses of the impact of educational technology. The recipient or recipients would coordinate and assist the data collection and evaluation activities for each project. Leadership and dissemination activities related to the projects funded by this program are also included.

Authorization of Appropriations

Proposed language – There are authorized to be appropriated to carry out this part, such sums for fiscal year 2001, and for each of the four succeeding fiscal years.

Explanation – The authorization for 2001 cannot be determined until decisions have been made on the 2001 budget. This section needs to be added because the current law has the Authorization of Appropriations section at the beginning of Title III.

DRAFT - February 26, 1999

Insert Proposed Part D -- Regional Technology in Education Consortia
(Current section 3141)

Grants Authorized—section 3141(a)(1)

Current Law: Section 3141(a)(1) provides the authority to make grants to consortia of regional entities, with a priority for the Eisenhower Consortia, the regional labs, the comprehensive centers, and other regional entities designated by the Secretary. Each region of the U.S. shall be served by a consortium.

Proposed amendment: After "grants, add "or contracts". Delete "through the Office of Educational Technology". Delete last sentence.

Explanation: The authority to make contracts instead of grants will provide greater flexibility for the Department in defining the work of the RTECs. We are deleting the priority for awards to go to current Department technical assistance providers.

Requirements—section 3141(a)(2)

Current Law: Each consortium must (A) be composed of SEAs, institutions of higher education, nonprofit organizations, or a combination of these entities; (B) develop a regional program that addresses professional development, technical assistance, and information resource dissemination, with special emphasis on meeting the needs of the region; (C) foster regional cooperation and resource sharing.

Proposed amendment: Add language that makes the general technical assistance requirements from Title XIII applicable to this program.

Explanation: The requirements for all technical assistance programs will be found in section 13003 of the reauthorized Title XIII. These requirements should be incorporated by reference, or explicitly, into this section so that they apply fully to this program.

Functions—section 3141(b)

Technical Assistance—section 3141(b)(1)

Current Law: Each consortia shall engage in the following activities, to the extent practicable: (a) collaborate with SEAs and LEAs to develop strategies to assist disadvantaged schools; (b) provide information on types and features of educational hardware and software and make recommendations that support the National Goals and the needs of the school; (c) participate in the tailoring of software and other materials to meet State standards; and (d) provide technical assistance to facilitate the use of electronic dissemination networks by SEAs, LEAs, and schools.

Proposed amendment: In (B), delete "in coordination with information available from the Secretary"; delete "evaluate and make recommendations on equipment and software that support the National Education Goals and are suited for a school's particular needs".

In (C), change "to participate in the tailoring of" to "assistance in applying advanced technologies,"

Explanation: These changes are minimal, in order to clarify and make the language more accurately reflect the work of the RTECs.

Professional Development—section 3141(b)(2)

Current Law: Each consortia shall engage in the following activities, to the extent practicable: (a) develop and implement technology-specific professional development; (b) develop training resources; (c) establish a repository of professional development and technical assistance resources; (d) identify and link technical assistance providers to State and local agencies; (e) ensure that training and TA meet the needs of educators, parents, and students served by the region; (f) assist IHE's to develop and implement preservice training programs; (g) assist LEAs and schools in working with community members and parents to develop support for technology programs and projects.

Proposed Amendment: In (A)(i), add "and other experts" after "library personnel".

Delete (A)(ii)(II).

In (A)(ii)(IV), change "video conferences and seminars which" to "the use of advanced telecommunications to"

Delete (A)(ii)(V).

Delete (B) and (C).

In (F), after "preservice training programs", add "that incorporate the effective use of advanced technology into teacher preparation courses."

In (G), change "develop support from" to "increase the involvement and support of"

Explanation: These edits are intended to simplify the professional development activities authorized. Specifically, the reference to adult literacy has been deleted, because the RTECs have only minimally engaged in activities in this area. Other edits are made to update the language to more accurately reflect the work of the RTECs.

Information and Resource Dissemination—section 3141(b)(3)

Current Law: Each consortia shall engage in the following activities, to the extent practicable: (a) assist State and local education agencies in the identification and procurement of financial, technological, and human resources needed to implement technology plans; (b) provide outreach and work with SEAs and LEAs to assist in the development and validation of technology education resources; (c) coordinate activities and establish partnerships with organizations and

institutions of higher education that represent the interests of the region pertaining to educational technology.

Proposed Amendment:

Add "(A) maintain or participate in a nationally accessible repository of information about effective uses of educational technology, including professional development, and disseminate resources nationwide."

Move (b)(3)(C) to (b)(4).

Explanation: We are adding a provision to authorize the RTECs to collect and disseminate information. Section (3)(C) is moved to the next section because it describes coordination and not dissemination.

Coordination—section 3141(b)(4)

Current Law: Each consortia shall work collaboratively and coordinate services with appropriate regional and other entities assisted by the Department.

Proposed Amendment:

Move (3)(C) to this section, which deals with coordination.

Explanation: see above.

New section—Targeted Assistance for Department Technology Programs

Proposed amendment: Add: "Each consortium shall collaborate with other Department technology programs, particularly the State formula grant program (Title III, sec. 3132), and the discretionary grant program (sec. __), to provide specific assistance that supports the needs of the programs, particularly in the provision of high-quality teacher professional development, and to provide feedback to ensure that these Department programs are meeting the needs of the field.

Explanation: This language is meant to require that the RTECs work collaboratively with the other Title III programs, to provide assistance and guidance as needed.

New section—Authorization of Appropriations

Proposed language – There are authorized to be appropriated to carry out this part, such sums for fiscal year 2001, and for each of the four succeeding fiscal years.

Explanation – The current Title III has the Authorization of Appropriations at the beginning of the Title. We want each program to have its own Authorization of Appropriations so that the funding level of one program is not tied to the others.

Current Part A, Subpart 4 – Product Development

Current Law: Authorizes support for the development of curriculum-based learning resources and long-term comprehensive instructional programming.

Propose Amendment: Delete this section. *This section has never received funding.*

Current Part B – Star Schools

Current Law: Provides support for programs that provide content for students and professional development activities for teachers through distance learning technology.

Proposed Amendment: The purposes of this program would be included in the new discretionary grant program. *As a result of recent advances in distance learning technology, the purposes of this program and the current Technology Innovation Challenge Grants are able to be combined into a single discretionary grant authority to develop innovative applications of technology to improve teaching and learning.*

Insert Proposed Part E -- Ready to Learn Television (Current Part C)

Reauthorize as is, with the following amendment:

Section 3308 – Authorization of Appropriations

Proposed amendment: Delete "$30,000,000 for fiscal year 1995, and such sums as may be necessary for" and insert "such sums as may be necessary for fiscal year 2001 and"

Explanation: the amount of funding to be requested will be determined after budget decisions for fiscal year 2000 have been made.

Insert Proposed Part F -- Telecommunications Demonstration Project for Mathematics (Current Title III, Part D)

Reauthorize as is, with the following amendment:

Section 3403 – Authorization of Appropriations

Proposed amendment: Delete "$5,000,000 for fiscal year 1995, and such sums as may be necessary for" and insert "such sums as may be necessary for fiscal year 2001 and"

Explanation: the amount of funding to be requested will be determined after budget decisions for fiscal year 2000 have been made.

Current Part E – Elementary Mathematics and Science Equipment Program

Current Law: Provides support for the purchase equipment and materials to improve mathematics and science education.

Proposed Amendment: Delete this part. *This part has never received funding..*

Educational Technology	
CURRENT LAW	**PROPOSED**
Title III, Part A, subpart 1 - National Plan and Federal **Leadership** – Provides for development of a National Plan for educational Technology and a broad authority to fund leadership activities. FY '99 request - $87 million ($85 million for programs; $2 million leadership)	Retained with minor changes -- Focus on interagency cooperation.
Title III, Part A, subpart 2 – School Technology Resource Grants (**TLCF**) – Provides State allocations proportionate to Title I; competitive below the State level to LEAs; assistance goes to poor and neediest LEAs as defined by States. FY '99 request - $475 million	Retained with changes to targeting – Provides State allocations proportionate to Title I; competitive below the State level; 50 percent of awards must go to district with high percentage of SWP schools; remaining funds also targeted. (to be developed). Professional development no longer included in uses of funds. (to be further specified in PD paper)
Title III, Part A, subpart 2 (3137) – National Challenge Grants (**TICG**) – Discretionary grants. Shares statutory uses of funds with TLCF, requires consortia, involvement of low-income schools, shared funding. FY '99 request - $106 million	Consolidated with Star Schools into a single discretionary program with strong evaluation and dissemination requirements. Uses of funds (to be developed)
Title III, Part A, subpart 3 – Regional Technical Support and Professional Development (**RTECs**) – Six regional technical assistance entities provide a variety of services. Includes work with districts, States, and community orgs. FY '99 request - $10 million	Considered as part of general ESEA technical assistance proposals. (To be developed)
Title III, Part A, subpart 4 – Product Development – Discretionary grants and loans to consortia to develop programs or systems of educational technology. FY 99 request - none	Unfunded authority -- repeal

Title III, Part B - **Star Schools** – Discretionary grants. Supports multistate consortia that primarily use broadcast satellite TV to deliver distance learning to schools that would not otherwise have access. Also provides professional development via distance learning. Computer networks can be used. FY '99 request - $34 million	Consolidated with TICG into a single discretionary program with strong evaluation and dissemination requirements. Uses of funds (to be developed)
Title III, Part C - **Ready-to-Learn Television** – Provides an award to the Corporation for Public Broadcasting to develop children's educational television programming. FY 99 request - $7 million	Authorize under CPB? (undecided)
Title III, Part D - Telecommunications Demonstration Project for Mathematics -- Provides an award to the Public Broadcasting System to produce "**Mathline**," a television broadcast for teachers. FY '99 request - $2 million	Authorize under CPB? (undecided)
Title III, Part E – Elementary mathematics and Science Equipment Program – State formula grant program, with one-time awards to LEAs for elementary school scientific equipment and resources. FY'99 request – none	Unfunded authority -- repeal
	Professional development – to be included in teacher capacity proposal, with a trigger that would require of use of teacher capacity funds for professional development at a proportionate level when Federal funds were used for educational technology.

10/7/98

Technology for Education

The paper that follows provides research, discussion, pros and cons, non-legislative options, and options considered and rejected for each of the questions below. The paper covers the whole of the current Title III of ESEA and represents contributions from OESE, OERI, OET, and the Budget Service.

Specifically, we are proposing: to continue a separate authority for educational technology; to strengthen the targeting provisions in the TLCF but also provide States with greater discretion over part of the funding; to consolidate Star Schools, the TICG, the RTECs, and the FY '99 programs under the leadership authority into a single discretionary authority; and to repeal unfunded authorities. We have not recommended disposition of Ready-to-Learn and the Telecommunications Demonstration Project for Mathematics.

Throughout, we intend a stronger focus on high need areas, direct benefits to students, sustained professional development and capacity-building to maximize the effect of technology, a balance between Federal and State discretion over funding, and development of well-tested innovation to integrate technology into teaching and learning.

A summary of the paper's recommendations follows.

PURPOSE

A. What should the purpose of the Technology for Education program be?

Recommended Option

To accomplish our goal, the educational technology programs administered by the Department should have as their overall purpose to **support innovation and other activities leading to gains in student performance against challenging State content and performance standards and to help reduce inequities in the distribution and effective use of educational technology.**

This purpose will be achieved by a combination of several strategies:

1) expand and integrate technology use in teaching and learning, especially in classrooms in schools with the greatest need;
2) demonstrate and disseminate effective models of technology usage;
3) develop better, more effective applications in critical need areas; and
4) build the capacity of States and low-income districts to use technology well.

These strategies will require coordination, and will include interagency collaboration on research, dissemination, technical assistance, and national leadership efforts, as well as retention of the authority to coordinate these efforts with the Office of Educational Technology. The grant-making authority in the current Leadership authority, however, would be consolidated under a single discretionary authority.

1) THRESHOLD QUESTION: INFRASTRUCTURE

B. Should there continue to be authority to provide funds for equipment, software, and telecommunications?

Recommendation

We recommend that as we **continue to support funding for equipment**, software, and telecommunications, we also strengthen the targeting provisions so that funds are directed to districts and schools where disparities are the greatest and further investments continue to be needed.

For **the consolidated discretionary authority** (discussed under section E) we recommend that **funding for equipment be limited** although not prohibited. Some funding for equipment, software, and access may be necessary to allow some districts that are less well equipped to participate in the development of models and other activities under this authority. However, the purpose of the discretionary authority would not be to provide infrastructure but to develop, demonstrate, and evaluate good practice. Some limit (e.g., 15 percent) that could be waived in special circumstances would be set to prevent recipients from using funds primarily to equip schools.

TARGETING

C. How can greater equity in educational technology best be achieved? How would funds be distributed? How would the program be targeted?

Recommended Option

Authorize a State formula grant program, similar in size to the current TLCF, but more **explicitly target program funds** to districts and schools with the largest number or percentage of children in poverty and demonstrate the greatest need for technology. Unlike the current authority, the new statute would include a definition of high poverty and greatest need for technology. The revised statute would maintain the current language that grants be of sufficient size and duration to have a substantial impact on student learning. Requirements for State and local technology plans would be retained, with the added provision that plans be renewed every three years.

Funds would continue to be distributed to States in proportion to each State's share of funds under Part A of Title I of the ESEA. The 5 percent limit on a State reserve for administrative funds would be retained. States would award funds competitively within the State, and each State would be required to distribute 65 percent of funds to the districts in the top quartile for students eligible for Title I. Funds would benefit schools within such districts that are eligible for schoolwide projects.

States would have greater than current **discretion over remaining funds** (30 percent), but the purpose would be to benefit the same types of districts and schools. Funds would remain targeted to improving classroom instruction, but States would be free to design subgrant competitions and designate subgrantee types other than LEAs in order to develop model programs, practices, and products aimed at meeting State educational

technology and learning goals in the targeted and similar districts and schools.

Authorize a broad **discretionary grant program that requires activities to benefit underserved communities**. This would require that eligible recipients, beneficiaries of services, or the site for an activity be defined for a particular competition so that appropriate attention is given to underserved communities. (See discussion under Sections E and F)

RESEARCH

D. How should research on educational technology be supported and integrated?

Recommended Option

OERI's current research authority does not specify research into educational technology as a part of the purpose of any of the Institutes. We recommend that a more explicit authority for research into the use of technology for teaching and learning would be **part of the reauthorization of the Educational Research and Improvement Act**. Consequently, no new research authority would be needed under the ESEA.

A. INNOVATION

B. How can we support the development of models of effective and innovative practices?

Recommended Option

We recommend authorizing **a discretionary grant program** that is similar to the current Technology Innovation Challenge Grants program, but with greater emphasis on multi-state involvement, rigorous evaluation, and dissemination of models, and that incorporates the flexibility, leadership, and evaluation provisions of the current Star Schools authority. This program would support the two overall purposes of the educational technology programs: equity in access and use of technology; and nationally improved student achievement. These purposes will be achieved through the development of technology applications that are proven effective and can be replicated by schools throughout the Nation.

In keeping with the overall purposes of ESEA, an underlying framework of all such competitions would be a strong focus on benefiting underserved communities. Eligible entities under this authority would not be limited to LEAs. The Department should maintain the flexibility to award grants to States, IHEs, non-profit organizations, and other business and for-profit entities, as long as these applicants can demonstrate: (1) partnership with LEAs as defined in the targeting provision; and (2) that the project will directly benefit those LEAs.

A. SCALING UP

B. How can we scale up effective practices beyond pockets of excellence? How can we ensure that information, assistance in planning, implementing and

evaluating projects, and professional development concerning effective and innovative practices is useful and accessible?

Recommended Option

Require a setaside for educational technology in consolidated authority: Embed professional development for **educational technology in a cross-cutting teacher quality authority**, with a required setaside for technology that would be triggered if a district used funding under the technology authority for equipment, software, or telecommunications. Make the setaside waivable if a district receiving funds for equipment, software, or telecommunications can demonstrate that there is sufficient attention elsewhere to professional development in the classroom use of educational technology. Professional development would continue to be supported under the recommended discretionary grant program and under that part of the State grant program over which States would have increased discretion.

Require that **substantial funding under the proposed consolidated discretionary grant program** (50 percent or more) be devoted to activities aimed at scaling up successful practices. Such activities could include building better links between research and practice and among interested groups; multi-state and other partnership activities; and a strong focus on activities to benefit schools in low-income communities. (See E, Innovation for a description of this part of the proposal.)

Technology for Education

PURPOSE

B. What should the purpose of the Technology for Education program be?

1. Introduction

In 1995 the President established the Technology Literacy Challenge and set out four specific pillars to support teaching and learning with technology:

1. All teachers in the Nation will have the training and support they need to help all students learn through computers and through the "information superhighway";

2. All teachers and students will have modern multimedia computers in their classrooms;

3. Every classroom will be connected to the information superhighway; and

4. Effective and engaging software and online learning resources will be an integral part of every school curriculum.

We propose to stay the course with the four pillars, and would make them an explicit objective of any new technology authority.

Since 1995, we have made very significant progress towards meeting these goals especially, even prior to the advent of the E-rate, the pillar - goal - for classroom connectivity. But as the summaries of studies around specific issues provided below illustrate, our progress, even with connectivity, has left some districts, schools and students behind. Among the four goals, two (the first, concerning professional development and support and the last, concerning software and integrating technology into the curriculum) have received less emphasis in the effort to establish the presence of technology in schools and require fresh commitment and focus.

It is important to remember while considering these options that the Federal investment, excluding the E-rate, is relatively small in all but the most expansive of the options considered below. Consequently leadership, leverage, links among program elements, and focused funding are essential to maximizing effectiveness.

5. Research Review

a. Equity: Technology has the potential to act as a great equalizer to abate the persistent differences between the education of poor children and their more wealthy peers. The

interaction that computers and telecommunications can provide with the world outside the school and the immediate community students live in can open the world to all, and do so with great richness and diversity. But for this to happen, students across different income levels must have roughly the same access to technology and quality of teachers, or what promises to be a great equalizer could instead exacerbate differences.

Each year since 1994, the National Center for Educational Statistics (NCES) has surveyed schools to determine their level of access to educational technology. The studies show that classroom access to telecommunications is growing at a very fast pace but that poorer schools lag in getting classrooms connected. In the 1997 report on telecommunications access, there is a distinct break in the percent of classrooms with internet access between schools with 71 percent or more free and reduced lunch students (14 percent with access) and schools with 31 to 71 percent free and reduced price lunch students (27 percent with access). Furthermore, NCES' projections to 2000 show that classrooms in poorer areas are likely to take longer to reach the same levels of connectivity as wealthy districts.

According to Quality Education Data (QED), as reported in *Computers in Classrooms*, (a Policy Information Report from the Educational Testing Service (ETS), 1997), schools with less than 25 percent minority enrollment have a student-to-computer ratio of about 10 to 1; schools with 90 percent or more minority enrollment have a ratio of 17.4 to 1. The ratio of students-to-computers also goes up as the number of Title I students increases. ETS concludes that students with the greatest need get the least access. Looking at multimedia computers, schools with more than 90 percent minority student enrollment have about 30 students per modern computer compared to about 22 to 1 for schools with between 25 and 49 percent minority student enrollment. Many observers believe that funding for technology from Title I has prevented an even greater differential between communities.

In a 1989-91 study, Henry Becker found inequities based on race, gender, tracking, urbanicity, and subject area. In a previous study, Becker found that students in lower tracks were often limited to drill and practice work on computers. Little more recent data on how computers are used in instruction with different groups of students exists, although Becker has a new study under way.

A study reported in *Science* in April 1998 (first published on the Internet, at www2000.ogsm.vanderbilt.edu/paper_list.html, April 1998) used analysis of a Nielsen survey to describe differences in African American and white access to personal computers and the Internet. One conclusion of the study is that for respondents with incomes over $40,000 there is little difference in access between African Americans and whites. A second conclusion is that, in the case of students, household income does not fully explain race differences in home computer ownership. Extending this, the authors state that "white students lacking a computer at home, but not African American students, appear to be finding some alternate means of accessing the Internet." For students with home access to a computer, the race-based difference goes away. The authors also

conclude that access to the Internet at school is about equal for both groups of students but leave open possible differences in the technological capacity of the schools. The authors state that "... white students, whether or not they have a home computer, are much more likely than their African American counterparts to use the Web at places other than home, work or school."

A report of 1997 Current Population Survey data published by the National Telecommunications and Information Administration (NTIA) in summer 1998 (*Falling Through the Net II: New Data on the Digital Divide*; *Falling Through the Net I* was published in 1994) describes telephone (telephones are necessary for the most common forms of internet access), PC ownership, and on-line access by geographic area, race, and income. Their profiles of the least connected are:

- Rural Poor - Those living at the lowest income levels in rural areas are among the least connected. Rural households earning less than $5,000 per year have the lowest telephone penetration rates (74.4%), followed by central cities (75.2%) and urban areas (76.8%). By contrast, central city poor were the least connected in 1994. Rural households earning between $5,000-$10,000 have the lowest PC-ownership rates (7.9%) and on-line access rates (2.3%), followed by urban areas (10.5%; 4.4%) and central cities (11%; 4.6%).

- Rural and Central City Minorities - "Other non-Hispanic" households, including Native Americans, Asian Americans, and Eskimos, are least likely to have telephone service in rural areas (82.8%), particularly at low incomes (64.3%). Black and Hispanic households also have low telephone rates in rural areas (83.2% and 85%), especially at low incomes (73.6 and 72.2%). As in 1994, Blacks in rural areas have the lowest PC-ownership rates (14.9%) followed by Blacks and Hispanics in central cities (17.1% and 16.2%, respectively). On-line access is also the lowest for Black households in rural areas (5.5%) and central cities (5.8%), followed by Hispanic households in central cities (7.0%) and rural areas (7.3%).

- Young Households -- Young households (below age 25) also appear to be particularly burdened. Young, rural, low-income households have telephone penetration rates of only 55.4%, and only 15.5% of these households are likely to own a PC. Similarly, young households with children are also less likely to have phones or PCs: those in central cities have the lowest rates (73.4% for phones, 13.3% for PCs), followed by urban (76% for phones, 14.5% for PCs) and rural locales (79.6% for phones, 21.2% for PCs).

- Female-headed Households - Single-parent, female households also lag significantly behind the national average. They trail the telephone rate for married couples with children by ten percentage points (86.3% versus 96%). They are also significantly less likely than dual-parent households to have a PC (25% versus 57.2%) or to have on-line access (9.2% versus 29.4%). Female-headed households in central cities are particularly unlikely to own PCs or have on-line access (20.2%, 6.4%), compared to

dual-parent households (52%, 27.3%) or even male-headed households (28%, 11.2%) in the same areas.

Clearly, rural and central city minorities, low-income people and young and single-parent households have the least access and are least able to provide home access for their children.

These data on the digital divide highlight important quantitative differences in access to phones, computers and connectivity. It is also typical that providers of telecommunications services target innovations in services primarily to communities that are most likely to adopt them at an additional cost. Consequently the most visionary and innovative uses of technology generally take place first among the most privileged and best educated communities.

b. Support for Content Standards and Education Reform: Technology, used in regular teaching and learning, demands teachers to ask more real work of their students, students to work together in learning tasks, and teachers to plan lessons well so that time spent with technology is productive and targeted to real accomplishment. Technology, in short, is another way to approach school reform.

Cuban and Kirkpatrick recently published a critical review of the research on educational technology in *Technos* that distinguished between Computer-Aided Instruction (CAI), Computer-Managed Instruction (CMI) and Computer-Enhanced Instruction (CEI). They find that the research on CAI and CMI has been shown to improve student scores. In their observations on CEI, they note that "teachers become critical elements," and that "classroom technologies are severely limited in effectiveness *if not set within a general reform context*" (italics added). Research done by SRI International in the early 90's (noted by Cuban under "single studies, elementary and secondary: positive" and "CEI Models") indicates a strong correlation between classroom-level school reform activities (such as collaborative learning, heterogeneous grouping of students, and other forms of interactive learning using computers) and the use of telecommunications and computers in classrooms. The SRI study also contains an informative discussion of the relationship between technology and educational reform in the classroom.

States have begun to connect technology and content standards in various ways. For example, Virginia has built standards for student technology literacy into their content standards; New Jersey includes standards for student technology literacy as one of five cross-cutting work-related standards.

The International Society for Technology in Education (ISTE) has developed national technology standards for students, building on their development of technology standards for teachers (adopted by many States) and teacher preparation programs (adopted by NCATE). The standards however, are specific to technology and are not embedded in particular academic content areas.

A relatively new development in the extensive experience with distance education in the US, both with K-12 education under Star Schools and higher education, is the advent of the "Virtual High School," the use of the Internet to offer distributed courses in specialized or advanced topics to secondary students located in schools in several States. In addition, at least one State (Ohio) is exploring the electronic collection of teacher-developed lesson plans that would be linked to and support State content standards for middle school students; work that would be organized as elements of a curriculum designed to meet the State's proficiency standards. The Agency for Instructional Technology (AIT, publisher of *Technos*) has developed a grade 4-9 curriculum that to meet content and student performance standards they claim can be aligned with those of virtually all the States. The Milken Family Foundation collects and makes available lesson plans from their Milken Educators.

Additionally, a new report indicates that technology, when used to promote higher-order thinking skills instead of "drill and practice," can raise student achievement. The report from the Educational Testing Service, based on NAEP data, found that teacher training plays a critical role in using technology to improve student learning. For eighth-graders, the study found that professional development for teachers in using computers to teach higher-order thinking skills was positively related to academic achievement in mathematics. In contrast, the use of computers to teach lower-order thinking skills was negatively related to academic achievement. In the fourth grade, the study found professional development and using computers for learning games were positively related to academic achievement.

States have used technology for data collection and dissemination for some time. But at least one State (Maryland) has begun to look at how to provide schools with more immediate access to performance data through technology.

c. Using Technology To Change Teaching And Learning: By providing teachers with new tools for teaching, technology can change the way teachers teach and students learn. According to Technology Counts '98, released in September 1998, "education reformers generally agree that teachers should spend less time lecturing their students and more time engaging them in active learning activities." For example, technology can be used to facilitate higher-order thinking skills, allow students to learn at individual rates, and engage students as active learners rather than passive listeners. Technology can also be used to improve learning opportunities for students with disabilities. And computer-based assessments can provide teachers with critical information about individual student learning styles.

Telecommunications technologies add new challenges, complexities, opportunities and potential solutions for meeting the primary goal of helping all students achieve to high standards. The growth of telecommunications networks enables new kinds of links and associations among educators, students and the public. The goal is that the technology become transparent and support networks of those engaged in education improvement and reform. The federal government can have a significant role in supporting programs

that bridge technical requirements and promote wider communications.

Education visionaries talk about the future in terms of educating "anyone, anytime, anywhere" and providing "just in time" assistance and support. The recent advances in fast global telecommunications are capable of supporting powerful distributed education environments. The manner in which we deliver technical assistance to other service providers (e.g., states, intermediate service units), share information and learn from each other (e.g., linkages between researchers and practitioners) is already being affected.

6. Discussion

Technology – meaning computers and telecommunications for purposes of this discussion– is a powerful learning tool when used well as part of the daily business of teaching and learning. Technology in one form or another is nearly ubiquitous in commerce and industry and familiarity with it is becoming essential to good employment as well as full civic participation. In the context of schools, using technology well means not only familiarity, but realizing the potential to make a significant contribution to improved student achievement on State content and performance standards. We have a long way to go -- technology in schools is relatively undeveloped and teachers are only beginning to use it well. Our goal for the Nation is thus not only to help develop the best and highest level of use for technology in schools, but also to see that level of use become common throughout elementary and secondary education.

The four pillars for educational technology support this goal, but achieving the four pillars is beyond the scope of Federal funding. To meet this challenge, we must encourage strategic use of Federal resources to leverage other funding, substantially increase knowledge about new uses of technology, and ensure that introducing technology in schools does not contribute to further divisions in society. While technology is particularly powerful in reducing the barriers between rich and poor students, it is successful only if access to it is readily available and used in educationally significant ways.

Our particular goal for this reauthorization and the funding we provide, then, is to accelerate the innovation and spread of educational technology for those schools and communities where its power as a learning tool and equalizer is most needed – the same schools targeted by Title I's school-wide projects and the Schools and Libraries Corporation 80 percent level of subsidy.

7. Recommended Option

To accomplish our goal, the educational technology programs administered by the Department should have as their overall purpose to **support innovation and other activities leading to gains in student performance against challenging State content and performance standards and to help reduce inequities in the distribution and effective use of educational technology.**

This purpose will be achieved by a combination of several strategies:

8) expand and integrate technology use in teaching and learning, especially in classrooms in schools with the greatest need;
9) demonstrate and disseminate effective models of technology usage;
10) develop better, more effective applications in critical need areas; and
11) build the capacity of States and low-income districts to use technology well.

These strategies will require coordination, and will include interagency collaboration on research, dissemination, technical assistance, and national leadership efforts, as well as retention of the authority to coordinate these efforts with the Office of Educational Technology. The grant-making authority in the current Leadership authority, however, would be consolidated under a single discretionary authority.

Pros:

The purpose and related strategies cut across different types of technology programs (State formula, discretionary, research, etc.), other Department education initiatives and elementary and secondary education initiatives in other federal agencies. The focus on State content and performance standards is consistent with other ESEA and Department-wide objectives.

The program's purpose, like the four national pillars, is broad enough to encompass State and local goals and efforts, which makes possible greater indirect effect through support for those efforts.

Stronger targeting, support for innovation, and attention to professional development and capacity building are consistent with other ESEA efforts.

Cons:

With limited resources it may be more realistic to focus our efforts on more limited and directly achievable goals. For example, we could define a subset of the national goals (such as providing professional development in 50 percent of low-income schools) and target all funding to that objective.

Much of the activity necessary to move forward with the proposed purpose is beyond the Department's direct influence and funding.

Achieving such a broad purpose through a National agenda for educational technology relies heavily on coordinated planning and effort across the Federal government. Such an effort is very difficult to achieve without a specific mandate for federal policy leadership and associated funding.

12. Other Options Considered and Rejected

The options that follow are not so much choices that have been rejected (since all would be included in our recommended options) but instead aspects of the need for educational technology that could serve as alternatives to the recommended purpose.

a. Focus primarily on achieving equity.

Equity is the long-standing rationale for most substantial ESEA programs. The research shows that inequities in the distribution and use of technology in classrooms persist. However, a Federal program to achieve equity by providing funds for equipment and targeted professional development, for example, like the E-rate, would be very expensive and could create a long-term Federal obligation, and thus would be unlikely to survive the authorization process. Options concerning program size and targeting are discussed below.

b. Focus primarily on research and development.

Better research and evaluation information is the need most commonly expressed by State coordinators and others. Innovation is the focus for a substantial part of our current funding. The PCAST report in particular has called for a greatly expanded Federal investment in research and development. However, an investment primarily in research and development would limit funding for providing and using technology well in classrooms and could be perceived as reducing the immediate classroom effect. Options concerning treatment of research, development and innovation in a broad authority are discussed below.

c. Focus primarily on professional development.

Many policymakers fear that teachers' lack of knowledge about the appropriate use of technology in classrooms could lead to the waste of a substantial part of the investment being made in equipment and connectivity. Recent analysis of NAEP data shows a correlation between even limited professional development and positive classroom effects. However, professional development (or "training") in the use of computers is unlikely by itself to lead to appropriate classroom use. More integrated professional development that teaches the use of technology as an instructional tool in pursuit of curriculum goals is difficult to distinguish from professional development that teaches the use of other tools and techniques for the same purpose. Professional development in the use of technology in classrooms is singularly important, but, as a primary purpose, does not distinguish technology funding from other funding for professional development that could easily include the use of technology. Options concerning professional development as part of a broad authority are discussed below.

THRESHOLD QUESTION: INFRASTRUCTURE

B. Should there continue to be authority to provide funds for equipment, software, and telecommunications?

1. Introduction

In preparing to make the recommendations in this paper, the reauthorization working groups first considered a threshold question: should the Department continue to provide funding for equipment, software, and telecommunications? Were a decision made not to fund these activities, there is little reason for a separate technology authority; all other activities currently supported by the current State formula grant program (e.g. professional development) could be funded under other authorities. We have recommended that research be undertaken under a new OERI research authority. Technical assistance could be provided under a broader authority for that purpose. Innovation could be supported by retaining an education technology discretionary authority, or under a more general authority like FIE or by other agencies.

However, as reflected in the studies referenced below, while access (to telecommunications at least) is generally improving across the board, classroom access and hardware in poorer schools specifically lag well behind.

2. Research Review

The most recent data on student-to-computer ratios and telecommunications access is Market Data Retrieval (MDR)'s 1998 data, as published in Technology Counts. Although the method used (census survey) and response rate (38 percent) make reliance on the data questionable, the data show remarkable progress in the student to computer ratio (13 students to a multimedia computer overall; 17 to 1 in classrooms) and classroom access to the Internet (44 percent). MDR's data also indicate less progress being made in poorer (50 percent of students qualify for free lunch) schools (80 percent school access compared to 89 percent in all other schools).

NCES' Telecommunications survey for 1997 shows a similar but bleaker picture. As schools have higher percentages of poor students, access to telecommunications is reduced. In schools with 71 percent or more free and reduced-price lunch, 63 percent have access to the Internet compared to a national average of 78 percent; in schools with less than 11 percent free and reduced-price lunch, 88 percent have access to the Internet. For classroom access, there is a distinct break in the percent of classrooms with internet access between schools with 71 percent or more free and reduced lunch students (14 percent with access) and schools with 31 to 71 percent free and reduced price lunch students (27 percent with access). Furthermore, NCES' projections to 2000 show that classrooms in poorer areas are likely to take longer to reach the same levels of connectivity as wealthy districts. MDR's 1998 report (as provided in *Technology Counts '98*) does not provide data for classroom connectivity disaggregated for poorer districts.

Some studies, including the *Digital Divide* report from the Commerce Department and the Neilson survey reported by Vanderbilt University researchers on the Internet, indicate that school access to technology is not strongly differentiated by poverty, based on reports from students and households surveyed. Both studies argue, however, that access outside of schools is strongly differentiated according to income, and, in the Vanderbilt study, by race. Lack of access outside of school has a strong effect on the ease with which students adopt and use technology in schools.

Since the passage of IASA, States' investment in educational technology has increased, although there is great variation in the level and consistency of support. In 1998, according to Technology Counts, all but eight States provided funding for educational technology; of these, 22 targeted funds in some manner to lower-income districts.

1. Discussion

The administration's commitment to the Technology Literacy Challenge Fund, which has been the primary federal source for funding for equipment, software, telecommunications, and technology-related professional development, has been repeatedly expressed as $2 billion over five years. Fiscal year 1999 is the third of five years; in three years, $1.05 billion has been appropriated for the TLCF. According to the current schedule, fiscal years 2000 and 2001 would take place under the reauthorized statute.

States have used funds under the TLCF for a wide variety of uses, with considerable variation among States. State educational technology plans are required, and States hold competitions among districts for TLCF funding. States have considerable latitude in establishing priorities for TLCF competitions, and most have used funds to support one or another aspect of their State technology plan. Some have limited the use of TLCF funding to professional development and others have required that a percentage of funds (usually 30 percent) be used for professional development. But there is little doubt that much of the funding has been used to purchase needed equipment, software, and access.

The Department's discretionary educational technology programs have also supported extensive hardware investments. In the case of the TICG, some believe that innovative approaches developed by recipients could not be carried out without expensive equipment and that very few schools, particularly poor schools, could replicate their accomplishments without special funding.

The Star Schools program has historically supported two forms of infrastructure that, especially in the early years of the program were costly: support for downlinks at schools, such as satellite dishes and similar equipment, and support for providers of distance education (the primary recipients of the grant) to enable services through means, such as satellite uplinks, telephone bridges, and studio equipment that (at least in the earlier days of the program) were not commonly available. Star Schools grants have progressively larger matching requirements: 25 % first two years, 40% 3rd and 4th year, and 50% the 5th year. Furthermore, "not less than 25 percent of the (federal) funds ...

shall be used for the cost of instructional programming ... in any fiscal year".

2. Recommended Option

We recommend that as we continue to support funding for equipment, software, and telecommunications, we also strengthen the targeting provisions so that funds are directed to districts and schools where disparities are the greatest and further investments continue to be needed, and that we limit the use of discretionary funds for equipment.

In the next section, where we take up targeting, we recommend that a substantial part of the State grant program be targeted to the top quartile of Title I districts, and to schools eligible for schoolwide projects within them because these districts and schools are likely to be the neediest.

For the consolidated discretionary authority (discussed under section E) we recommend that funding for equipment be limited although not prohibited.

Some funding for equipment, software, and access may be necessary to allow some districts that are less well equiped to participate in the development of models and other activities under this authority. However, the purpose of the discretionary authority would not be to provide infrastructure but to develop, demonstrate, and evaluate good practice. Some limit (e.g., 15 percent) that could be waived in special circumstances would be set to prevent recipeients from using funds primarily to equip schools.

Pros: Reduces focus on funding for equipment and permits greater investment in professional development and other activities supporting innovation and effective instructional uses.

By controlling the use of funds for equipment, begins to shift the long-term costs of support and equipment replacement to State and local sources.

By targeting funding for equipment to low-income communities and focusing on innovations using existing infrastructure provides a clear rationale – equity and innovation - for Federal support.

Cons: Strong targeting provisions may be perceived as reduced support for State priorities and strategies as promulgated in State Educational Technology plans.

Data supporting distribution of need for equipment is relatively weak; some States have argued that the greatest equipment needs are in middle-income schools.

Effective use in targeted schools is dependent on a concentration of effort from other sources.

5. Non-legislative options:

- Encourage stronger targeting and more support for professional development under the TLCF (see non-legislative options in the next section).
- Set priorities for funding under the TICG and Star Schools program to reduce the level of funding for equipment and encourage greater investment in professional development (see also the non-legislative recommendations under section E).

2. Other Options Considered and Rejected

a. Provide funding for hardware, software, and telecommunications as part of a construction and infrastructure development authority.

Pro: Links construction and technology so that infrastructure needs (electrical, wiring) for technology are directly linked to technology infrastructure plans.

Cons: Separates funding for equipment from funding for professional development in its use.

Treats equipment as a one-time capital cost, without built-in technical support and regular replacement.

b. Consolidate educational technology funding into a teacher and school capacity-building authority.

Pro: Makes technology an integral part of a high-capacity workplace for teachers and students.

Focuses attention on professional development and technology as a key component in increasing teacher capacity.

Builds in common provisions for planning, professional development, concentrating resources, possible peer review.

Cons: Development of educational technology as a focus for effort is reduced.

Funding for equipment, software, and telecommunications would not be separately authorized.

TARGETING

C. How can greater equity in educational technology best be achieved? How would funds be distributed? How would the program be targeted?

1. Discussion

In looking at targeting we considered both targeting recipients of awards and the strategies and purposes of awards. Both the proposed State formula program and consolidated discretionary program would do both in some measure, but the emphasis would be different. The State formula grant program would target a substantial part of the funds to low-income districts and schools; the discretionary grant program would make development and providing access to innovation for low-income schools and districts a priority.

The Department currently funds a technology State formula grant program, the Technology Literacy Challenge Fund (TLCF). The TLCF helps States put into practice the strategies contained in their State technology plans. Funds from the TLCF assist States in developing the infrastructure needed to integrate technology into classrooms. The Department is encouraging all States to use 30 percent of their fiscal year 1999 funds to provide professional development to help teachers to effectively integrate technology into their curriculum. For fiscal year 1999, $425 million has been appropriated for the TLCF.

Prior to receiving first year funds from the TLCF, States were required to develop a statewide educational technology plan, and have such plan approved by the Department. Each plan included the State's long-term strategies for financing educational technology within the State, described how other public and private agencies would participate in implementing and supporting the State plan, and outlined the technical assistance that will be provided to the local educational agencies within the State that possess the largest number or percentage of children in poverty and that demonstrate the greatest need for technology.

Each State receives a share of TLCF funds in proportion to its share of funds under Part A of Title I of the ESEA, except that no State receives less than one-half of 1 percent of the amount available. Appropriations language limits funds reserved for the Outlying Areas to one-half of 1 percent. States must award at least 95 percent of their allocations competitively to local school districts.

Current targeting provisions are relatively weak. The legislation says that States must identify local educational agencies with the highest concentrations of poor children and the greatest need for technology and provide them with technical assistance. The statute also requires States to "provide assistance to local educational agencies" with high poverty and the greatest need for technology. In its guidance, the Department has interpreted "assistance" to also mean that States should make an effort to target funds to

the identified districts. There is some evidence that not all States are targeting their technology funds to districts with high poverty and the greatest need. A database of first-year recipients will soon allow us to compare CCD poverty data (free lunch) and other variables and compare recipients to State totals. We already know that four States (Kentucky, Alabama, Louisiana, and Tennessee) made TLCF awards to virtually every district within the State. About half of the States target their own funds for educational technology. *Technology Counts* reported a survey of State funding for educational technology. Of the 43 States that provided school districts with State technology funds in 1998, 21 target those funds to the poor districts within the State

The current educational technology discretionary programs also have relatively weak targeting provisions:

The authority for the TICG (section 3136) stipulates that "consortia shall include at least one local educational agency with a high percentage or number of children living below the poverty line...," and sets a priority for projects "designed to serve areas with a high number or percentage of disadvantaged students or the greatest need for educational technology."

The authority for Star Schools (Part B of Title III) specifies two alternative eligibility criteria: a public agency or corporation that "shall represent the interests of elementary and secondary schools that are eligible to participate in the program under part A of title I," or "a partnership... that includes... at least one (of either): a local educational agency that serves a significant number of elementary and secondary schools that are eligible for assistance under part A of title I or... is operated or funded for Indian children by the Department of Interior..."

The RTEC authority (Subpart 3 of Part A of Tile III) does not stipulate any targeting except to indicate that the RTEC, as part of one of four functions, shall collaborate with SEAs or LEAs requesting it, "particularly in the development of strategies for assisting those schools with the highest numbers or percentage of disadvantaged students with little or no access to technology in the classroom". The rest of the legislative language remains conspicuously silent about equity and targeting.

As a practical matter, it is probably accurate to assert that many TICG projects only marginally benefit most disadvantaged communities, and the implementation under many projects might be difficult to adapt elsewhere without substantial funding. There are nonetheless many TICG projects where the benefits go primarily to underserved populations.

While it is arguable that the targeting and eligibility provisions in Star Schools are weaker than in the TICG, much of the Star Schools effort has been directed to serving disadvantaged and isolated populations. Because much of the programming is broadcast broadly, other schools benefit as well.

The RTECs proposed different ways and differing commitments to serving low-income schools in their original applications. In February 1998, OERI engaged in a Midpoint Assessment of the program and of each project. All projects are now strengthening their focus on developing strategies, products and services that ultimately (directly or indirectly) benefit underserved communities.

2. Recommended Option

Authorize a State formula grant program, similar in size to the current TLCF, but more explicitly target program funds to districts and schools with the largest number or percentage of children in poverty and demonstrate the greatest need for technology. Unlike the current authority, the new statute would include a definition of high poverty and greatest need for technology. The revised statute would maintain the current language that grants be of sufficient size and duration to have a substantial impact on student learning. Requirements for State and local technology plans would be retained, with the added provision that plans be renewed every three years.

Funds would continue to be distributed to States in proportion to each State's share of funds under Part A of Title I of the ESEA. The 5 percent limit on a State reserve for administrative funds would be retained. States would award funds competitively within the State, and each State would be required to distribute 65 percent of funds to the districts in the top quartile for students eligible for Title I. Funds would benefit schools within such districts that are eligible for schoolwide projects.

States would have greater than current discretion over remaining funds (30 percent), but the purpose would be to benefit the same types of districts and schools. Funds would remain targeted to improving classroom instruction, but States would be free to design subgrant competitions and designate subgrantee types other than LEAs in order to develop model programs, practices, and products aimed at meeting State educational technology and learning goals in the targeted and similar districts and schools.

Authorize a broad discretionary grant program that requires activities to benefit underserved communities. This would require that eligible recipients, beneficiaries of services, or the site for an activity be defined for a particular competition so that appropriate attention is given to underserved communities. (See discussion under Sections E and F)

> **a. Pros:** Would target funds to the neediest schools and districts. Would provide States with funds and the discretion to develop professional development and other activities designed to use technology to support State learning goals in poor communities.
>
> Provides the Department with a flexible discretionary program that would focus on innovation, providing access to content, and scaling up effective uses of

technology in poor communities.

b. Cons: Would limit State discretion in awarding most funds. Some schools that receive earmarked funds may not be prepared to make effective use of them. State capacity to use discretion well varies substantially.

Discretionary program would support both innovation and benefits for schools in poor communities, which could be perceived as conflicting purposes.

3. Non-legislative options:

a. Improved targeting:

- Using information about the first year's awards as a guide, identify States where targeting was consequential and where it is not and provide technical assistance to States to improve outcomes.

- Undertake a new initiative, through the RTECs and other technical assistance entities, to target assistance to the big cities in implementing their educational technology plans.

- Initiate a consortium of States with large numbers of rural low-income schools to provide targeted technical assistance in developing and implementing educational technology plans.

- Encourage existing TICG projects to expand their work with low-income schools through mid-point assessments and other means.

- For new funding for professional development in educational technology, fund preservice institutions that prepare large numbers of teachers and teachers that serve in low-income communities; focus on both technology and preparing teachers to work with diverse students.

b. Home and community access:

- Provide States and local school districts with models for assistance to low-income households, such as Indiana's Buddy System, or Union City, New Jersey's Columbus Middle School.

- Undertake a task order through PES or OERI to evaluate the cost and effectiveness of various methods of providing home access to poor students, such as carry-home laptops, on-loan computers, apple e-mates or similar products, and school-based provision of email and school-mediated Internet access.

- As part of funding for new community access program, examine the effects of such

access on school performance.

- Increase support for technical assistance through RTECs to community based organizations in the provision of access to computers and the Internet for low-income students. Increase support for and coordination with programs in other agencies that support access to computers outside schools, such as the programs under the Library Services and Technology Act and the TIAP program operated by the Department of Commerce.

4. Other options considered and rejected

a. Funds for all high-poverty schools: A program designed to provide $100,000 per year to all schools nationally with at least 50 percent of their children eligible for a free- or reduced-price lunch subsidy.

Pros: The program would provide additional funds for technology to the neediest schools. Funds would be linked to the E-Rate and school wide programs.

Cons: School-level poverty rates can fluctuate from year to year. Program is prohibitively expensive. Strong targeting provisions are unlikely to survive reauthorization process. Estimated first year cost is $2.3 billion.

b. Guaranteed funding for high-poverty districts: A program designed to provide high-poverty districts with the same proportion of State technology funds as they receive under Part A of Title I.

Pros: The program would guarantee funding to high-poverty districts that frequently do not have the resources to be successful in obtaining competitive grants.

Cons: For many districts, the amount guaranteed would be too small to have substantial impact. Funds could go to districts unprepared to make effective use of them.

c. Award all funds directly to high-poverty districts through national competition: A program designed to award funds competitively to districts that have large numbers or percentages of children from households living below the poverty line and demonstrate the greatest need for technology.

Pros: Targets funds to the high-poverty, high-need districts. Funds are tied to a district technology plan.

Cons: Impact of program is limited to a relatively small number of districts. A competitive grant program of this size would be difficult for the Department to

conduct. Coordination with States would be reduced.

d. Change the formula allocating funds to States: Currently, each State receives a share of funds proportionate to it share of funds under Part A of Title I. Allocation could be based on each State's share of Concentration or Targeted grants, which is? are? designed to target funds to schools and districts with the greatest concentrations of poor children. Eliminate the small State minimum to provide more equitable per pupil funding among the States.

Pros: Changing the formula would more effectively target program funds to States with higher concentrations of poor children. Eliminating the small State minimum would provide more equitable per child allocations across States.

Cons: It is very difficult politically to change program allocation formulas. The elimination of the small State minimum has a greater relative impact on the small States than the large States. Politically difficult as all States have 2 senators.

RESEARCH

B. How should research on educational technology be supported and integrated?

1. Discussion

The 1997 report of the President's Committee of Advisors on Science and Technology (PCAST) issued a strong recommendation "that the federal government dramatically increase its investment in research aimed at discovering what actually works, not only with respect to the application of educational technology, but in the field of elementary and secondary education in general." The report recommended spending at least $1.5 billion on education research, particularly on educational technology. The CEO Forum, a group of corporate and education leaders, endorsed improved collection of data on schools' use of technology in a report released in October 1997. The Department's and others' attempts to identify measures of progress with regard to educational technology has revealed great inconsistencies in the way data is collected from one community or State to another, with the result that little consistently reliable national data is available.

In examining options for research, development, and implementation, we set out three goals for such an effort:

- Build State and local capacity to improve teaching and learning through technology.
- Improve State and local decisionmaking by building a better knowledge base.
- Integrate technology into other education objectives.

Determining the extent to which technology is actually being used in schools and the effectiveness of educational technology in raising student achievement is complicated by two inherent problems: (1) the difficulty in isolating the effects of technology, and (2) technology and the ways it is used are changing more rapidly than data can be gathered.

Quality must be a primary concern of any research program. The PCAST report points out that while numerous studies of educational technology have found positive effects on student learning and motivation, questions have been raised about the validity of these studies. The report calls for a "well-designed program of rigorous, carefully controlled, independently replicated research conducted over a reasonable period of time."

Furthermore, the PCAST report and others have criticized the fractured nature of many technology studies, in part because we have not yet determined what we want technology to accomplish. A recent article by Larry Cuban and Heather Kirkpatrick of Stanford University (*Technos*, Summer 1998) defines three distinct purposes for technology in schools: ensuring computer literacy, restructuring classrooms to improve teaching and learning, and improving course content and skills development. These competing

purposes result in studies which fail to provide clear conclusions, and are not comparable to similar studies. The PCAST report questions whether current studies are in fact measuring the higher-order thinking and problem-solving skills we wish to facilitate, and which are perhaps best facilitated by technology. In researching the impact of technology in the classroom, it is critical that we reconsider our definition of student achievement. By limiting our measures of achievement to test scores, we ignore the capacity of technology to fundamentally alter the way students learn.

There are currently few strong studies of classroom effectiveness. However, the ETS study released this month demonstrates that technology, when used to teach higher-order thinking skills and supported by teacher training, has a positive impact on student achievement in mathematics, based on NAEP data. In the article cited above, Cuban and Kirkpatrick note that outcomes of evaluations of educational technology are highly dependent on the quality of implementation of the instructional design and the knowledge and skills of the teacher.

In addition, there is a lack of solid data on the amount of technology that is already in schools and the way it is used. Two of the main sources for State data are Quality Education Data (QED) and Market Data Retrieval (MDR), commercial marketing firms that collect information on educational technology and sell it to technology manufacturers. Many experts believe the data collected by the firms is flawed.

2. Recommended Option

OERI's current research authority does not specify research into educational technology as a part of the purpose of any of the Institutes. We recommend that a more explicit authority for research into the use of technology for teaching and learning be part of the reauthorization of the Educational Research and Improvement Act. Consequently, no new research authority would be needed under the ESEA. However, the following are recommendations to be considered in the OERI reauthorization:

- *Create an interagency and Department-wide research agenda for educational technology.* In doing so, it is critical to consider research already being done by other agencies: NSF, NICHD, etc. Integrate research on technology into other critical education objectives. Consider as a model the proposed Interagency Research Initiative (proposed but not funded in the FY 99 budget). This program would have conducted comprehensive research, coordinated by multiple agencies, to study how children learn reading and mathematics at various ages, and how technology contributes to the learning process, through a series of grants.

- *Emphasize frequent interaction with State and local educators throughout the research process.* Research should be closely tied to the efforts and experiences of the field. Educators should be consulted during all stages, from

defining an agenda to disseminating the findings.

- *Make findings accessible to educators. Emphasize ongoing work with teachers on using research.* This should be emphasized within a research authority, as well as through a discretionary authority providing for dissemination and technical assistance. See Section F for further discussion.

In addition, a discretionary authority should be provided under ESEA that would support the development of models (including, to the extent possible, research-based models) of innovative and effective uses of educational technology. This program is detailed in the following section. This authority would provide for rigorous evaluation, dissemination and technical assistance so that the innovations may be scaled up and used by schools throughout the country.

a. Pros

By keeping technology research within the scope of the OERI reauthorization, the Department's research authorities are kept closer to a common authority. This permits research regarding technology to be considered as part of an overall research agenda for the Nation, and potentially links research on educational technology with other related research efforts.

b. Cons

Authorizing technology research as part of a broader research authority may not sufficiently emphasize the need for a coordinated research agenda for educational technology. This requires making choices between research on technology and research focused on other aspects of education. This would require working within the Institute structure (presuming it is reauthorized), which could prove less conducive to targeted research in technology than a dedicated authority.

3. Non-legislative options

- Examine the research that is currently being done by other agencies, determine unmet needs, and coordinate efforts.

- Use Office of Educational Technology to engage collaboration across agencies, government, and experts in the field.

- Develop Department-wide research agenda for educational technology, with input from all Principal Offices and major Department initiatives, including OERI's expert panel on technology programs.

- Work with Institutes to integrate technology research into current research agenda.

4. Other Options Considered and Rejected

a. Develop an ESEA proposal for a research authority requiring national, interagency research in the area of educational technology. This authority would focus on producing reliable research findings and making those findings effective in practice.

Pros: Utilize reauthorization to emphasize need for technology research; this would provide a consistent mechanism for funding research; would be consistent with PCAST report; and could be tailored to meet specific needs.

Cons: Establishing new research authority could be perceived as undermining existing research authority and would increase the number of technology programs where existing authorities arguably would suffice.

b. Provide a set-aside in formula grant program for State/local research.

Pros: A set-aside within a larger program may be more likely to receive funding. States would focus research in areas relevant to their issues such as content and performance standards, and a State-level research authority would encourage the use of research-based practice with other funding.

Cons: there would be reduced national control of agenda or quality; no comparability, and may not be useful at the national level. State capacity to conduct and use research varies substantially. The PCAST report identifies research as an important federal role.

c. Design research authority as a discretionary grant program, to work with State formula grant program. Such a program would support grants and contracts through a competitive process for local research in a variety of areas. This option is based on the interagency research initiative proposed in the FY 1999 budget, and would preclude a discretionary grant program (like the TICG) focusing on model development.

Pros: Competitive research awards encourage quality research. A large-scale competition would support research in a number of areas, specific to State and local needs. This program would facilitate coordination with other agencies.

Cons: Single discretionary program may not serve the needs met by TICG or similar program; e.g. to enable LEAs to develop and implement models, and to disseminate results. Would primarily involve research community, might be ineffective in reaching educators and policymakers.

B. How can we support the development of models of effective and innovative practices?

1. Discussion

While a research authority will not be developed under ESEA, another important consideration is how to stimulate innovation in practice and support the development of models of effective practice. We know that there is a great need for such models, and also for strategies to make them easily replicable for schools and LEAs.

As we look at findings and knowledge from various sources, some general conclusions can be made:

- Teachers and other educators in the field are demanding models of best practice that they can adapt or at least get inspiration from;
- Teachers and other educators very rarely implement a model in its entirety; rather, they adapt the model to their particular context and teaching style;
- Technology can be used to tackle certain nagging problems in unique ways. Concepts of technology-supported solutions can be developed based on other areas of research (such as on what we know about organizational change, what we know about learning by constructing knowledge, what we know about distributed collaborations in general, what we know about adult learning, and what we know about language acquisition);
- If innovation is to benefit people beyond those directly involved in the innovation project, a by-product of fundamental importance is the clear documentation of the innovation. Such documentation must not only include a description of the innovation and its practice, but also –and often more importantly– a clear description of the process the innovation team when through to implement it, as well as guidance about adapting the innovation to other contexts.

All three discretionary programs currently authorized under Title III have engaged in the development of new innovative models, to varying degrees.

One of the current authorizations for an educational technology discretionary grants program (the Technology Innovation Challenge Grants) supports competitive grants to consortia, including "at least one local educational agency with a high percentage or number of children living below the poverty line. . . ." The program focuses on funding programs that are developing innovative applications of educational technology that can serve as models for other schools. The authority requires that projects serve high-need areas; directly benefit students; ensure ongoing, sustained professional development; and ensure effective and sustainable use of technologies.

In addition, the current authority requires that "members of the consortia or other appropriate entities will contribute substantial financial and other resources. . . ." This has

resulted in leveraging of funds at a rate of 3.5 dollars for every Federal dollar. However, there is concern that this requirement may preclude some high-poverty districts from applying for a grant.

In awarding grants, the Secretary is required to give priority to projects that "are designed to serve areas with a high number or percentage of disadvantaged students..." However, the law does not stipulate what constitutes a high percentage or number of children living below the poverty line and the Department has not specified any percentage or number in its award process.

The Challenge Grants program has supported innovative projects dealing with a wide range of objectives, content areas, and populations. The projects are complex and diverse. The program was designed as a demonstration program, with some emphasis on replicability of the models developed. Evaluation strategies have been uneven, though guidance is now being given to all projects about exactly what is expected in this area. Furthermore, only now are some projects mature enough to start sharing their lessons learned as they enter a fourth year of operation. More emphasis must be placed on ensuring that models developed are evaluated and disseminated in a way that will be useful to other schools. These are elements that must be strongly considered in designing a new program. At the same time, the objectives of the current authority are the same for both the Challenge Grants and the TLCF. In practice, because of the different funding mechanisms, these programs serve two very different functions. A new authority should make these different objectives explicit, while making them complementary and consistent with the Department's overall technology objectives.

A second discretionary grant program, the Star Schools program, was first funded in 1988 as an initiative of Senator Kennedy (he continues to have an interest), and is similar, and in some ways more flexible than, the Challenge Grant authority. The program has as its major purpose the provision of distance education, and permits doing so through the use of computer networks. Partnerships and matching funds are required, and awards for large, five-year, multistate projects have been the norm in recent years. However, the program's stringent partnership requirements and history of support for satellite broadcast distance learning projects has resulted in relatively low numbers of applicants over the years. The option selected below when developed in detail may adopt some provisions from the Star Schools program. We do not recommend authorizing two educational technology discretionary authorities.

The RTEC program provides services to a wide variety of beneficiaries that includes teachers and students, technology coordinators, curriculum developers, staff from intermediate service units, state agency and local agency decision-makers, higher education faculty and deans, as well as providers of adult literacy services. The RTECs have found that while these constituents want good models of practice, they also want and need to adapt them. The process for implementing a model is often as significant to eventual success than the content of the practice itself. In developing service strategies for these clients, the RTECs have developed many innovative technology-supported ways

to model practices and deliver services.

2. Recommended Option

We recommend authorizing a discretionary grant program that is similar to the current Technology Innovation Challenge Grants program, but with greater emphasis on multi-state involvement, rigorous evaluation, and dissemination of models, and that incorporates the flexibility, leadership, and evaluation provisions of the current Star Schools authority. This program would support the two overall purposes of the educational technology programs: equity in access and use of technology; and nationally improved student achievement. These purposes will be achieved through the development of technology applications that are proven effective and can be replicated by schools throughout the Nation.

In keeping with the overall purposes of ESEA, an underlying framework of all such competitions would be a strong focus on benefiting underserved communities. Eligible entities under this authority would not be limited to LEAs. The Department should maintain the flexibility to award grants to States, IHEs, non-profit organizations, and other business and for-profit entities, as long as these applicants can demonstrate: (1) partnership with LEAs as defined in the targeting provision; and (2) that the project will directly benefit those LEAs.

Specifically, a discretionary authority at the national level is necessary to achieve several important goals:

1) Develop innovative, high-quality models of practice, targeting federal funds to focus on particular questions that impact all States and LEAs.

In defining uses of funds, the authority should remain broad but provide for specific strategies to ensure that models are linked to State content standards and can be replicated nationwide. Applicants should be required to demonstrate the impact of their projects, the level of innovation, and the potential for replication. Uses of funds should include professional development (both preservice and inservice), multi-State activities, and projects focused on particular types of classrooms (e.g., low-income, rural, special populations, core subject areas).

At the same time, it is important that projects funded under this authority implement reforms that will be useful to most schools and LEAs. For example, projects that receive a large amount of funding to develop cutting-edge, highly specialized activities will not develop models that can be easily adapted by other schools. Instead, projects should focus on innovative and effective models using accessible technologies and easily replicable processes.

The development of innovative models might consist of about 30 percent of funding under a consolidated discretionary authority. Other funding would support activities

related to content development and access, assessment of effectiveness, and services, primarily to disadvantaged schools, for the implementation of promising practices.

2) *Bring together multi-State partnerships of public and private entities, to support broad-scale development and reforms.*

One of the primary reasons to authorize a national level discretionary program, in addition to State formula funding, is to promote collaboration across States and support nationwide reform efforts. Multi-state partnerships are effective in consolidating funds and enhancing each others' efforts. A good example is the Star Schools program, where partnerships resulted in the development of quality distance learning programming and the capacity to broadcast those programs to many students who might benefit from them. Such collaboration is critical in all areas of education reform, but it is even more relevant for technology, because learning via technology is not limited to geographic boundaries. This program will emphasize, in part, connecting students and educators across these boundaries in order to enhance teaching and learning. Multi-state partnerships also allow for funding to be consolidated and targeted for particular efforts, rather than dispersing the funds and supporting duplicative projects in every state.

3) *Emphasize high-quality evaluation of demonstration projects, so that projects that demonstrate positive impacts can be used throughout the nation.*

Accountability will be a major emphasis of this authority. Projects must be required to conduct rigorous external evaluations to demonstrate the effectiveness of the model developed, and to inform other educators who might adopt the model. Such evaluation is necessary in order to develop and document an innovation, the process of its development, implementation and growth, and the manner in which it can be tailored to meet others' needs. The authority should allow for the option to require some kind of midpoint assessment; either a preliminary evaluation report, or a peer review assessment at some point in the grant period. This would inform the project staff as well as the program office, and ensure that evaluation is conducted from the beginning of the project period.

4) *Link funding to multi-State and national efforts in research, technical assistance, and dissemination.*

This program will enhance the links between research, technical assistance, and dissemination, by developing innovative models that put current research into practice and make these findings more accessible for educators across the nation. Technical assistance would support project development and assessment of impact, and would work with schools throughout the country to implement these and other models. For more on technical assistance and dissemination, and linking these programs, see the following section.

a. Pros

Competitive grants have stimulated local partnerships and leveraged large amounts of funding. TICG program has been highly competitive, which allows Department to fund high-quality projects and demonstrates community need and interest. Greater focus on model development and scalability will enhance effects of current program and continue national development of innovation. A common focus on low-income schools should insure that positive innovations are used by recipients in the State grant program.

b. Cons

Scalability has been a barrier under the current authority because funded projects are diverse and complex. The focus of the current program has been more on development of innovative applications, and less on how to make those applications meaningful to other schools.

3. Non-legislative options:

- Encourage the new (1998) TICG recipients and their State partners to connect to groups of States and related RTECs to jointly develop model professional development and evaluation efforts for use by school districts.

- Fund the development of models for professional development in educational technology in mathematics and science in cooperation with NSF under an absolute priority under the Eisenhower National Program. States would be asked to commit to adopting the models under the Eisenhower State Grants Program.

- Use the experience of the TICG program and the results from the first (1995) awards as a source for "lessons Learned".

4. Other Options Considered and Rejected

a. Mentor-district (or mentor-school) program. Authorize a multiple-year discretionary grant program designed to pair recipients with well developed educational technology plans and programs with potential recipients with less well-developed plans. Over the term of an award recipients would need to qualify for mentor status to continue (maybe with mentor status as a condition for year three or four funding). If authorized as a State setaside, States would be required to set criteria for mentor status.

Pros: Has the potential to provide direct assistance to schools in integrating technology. LEAs may have greatest capacity to assist other LEAs because they have relevant experience and a better understanding of the barriers. Some elements of this concept should be considered as part of a new authority.

Cons: Unclear whether this would work on a national level; can LEAs effectively

"mentor" other LEAs? Districts may elect to forgo additional funding to avoid new kind of responsibility.

b. Targeted partnership program. Authorize a targeted planning assistance and trial development program with strong partnership requirements (like Challenge grants or Star Schools). Competitive award of such a project could become one way to trigger a higher State allocation.

Pros: Linking competitive awards to State allocations will discourage Congressional earmarks for specific projects, because States would then be ineligible for the increased allocation.

Cons: Not clear that this would actually discourage directives; might actually increase the funding amounts for those directives. Also, will sound duplicative to Congress (i.e., because states receive competitive funding, they then receive increased funding through the State program).

SCALING UP

B. How can we scale up effective practices beyond isolated examples? How can we ensure that assistance in planning, implementing and evaluating projects and professional development concerning effective and innovative practices is useful and accessible?

1. Introduction

Educational technology, used well, is demanding of teacher's knowledge and skills. In many cases the capacity of schools and teachers to use technology well is least well developed in the places where it is needed most.

Furthermore, while there are many instances of effective implementation of technology to support teaching and learning, these are usually confined to a single district, school, or even teacher. State coordinators and others working in the field feel considerable urgency in making such successes more common.

The approaches to building capacity we have considered include both professional development and technical assistance. We believe that we should target both to the same districts and schools as the State Grant program described in the discussion of targeting earlier in this paper.

Professional development: About 2 million teachers are expected to be hired over the next ten years (school year 1997-98 to 2007-08). Just over 3 million teachers are currently (1997) employed, projected to increase to 3.3 million by 2007 (from the *Digest of Educational Statistics*, 1997). Overall, K-12 school enrollment is projected to rise 4.1 percent nationally over the next ten years, from about 52.2 million to about 54.3 million (from the *Digest of Educational Statistics*, 1997).

A report from the Office of Technology Assessment, *Teachers and Technology: Making the Connection* (April 1995) and the later report of the President's Committee of Advisors on Science and Technology (PCAST, March 1997) both emphasize that professional development for teachers must go beyond acquisition of computer skills to the use of technology to improve student achievement in the academic content areas.

These same two reports note that less than 15 percent of technology budgets are invested in teachers, despite recommendations that 30 percent be spent on professional development. Implicit in these recommendations is the recognition that the most effective uses of educational technology are highly dependent on the knowledge and skills of teachers.

As noted earlier, Cuban and Kirkpatrick note that for what they define as computer-enhanced instruction (CEI), teachers are central and required to play a much larger role than for computer-managed instruction (CMI) or computer-aided instruction (CAI).

NCATE has adopted ISTE's standards for technology for new teachers, and many colleges of teacher education are providing prospective teachers with instruction in the classroom use of educational technology. Nonetheless, State coordinators and others have voiced concern that most beginning teachers are not well prepared to use educational technology in classroom instruction.

Technical assistance background findings to be added.

2. Discussion

Professional development

In looking at professional development (meaning the full continuum from preservice to inservice), we considered the following four principles:

- Effective classroom use of educational technology requires well-informed and highly proficient teachers.
- Professional development in the use of educational technology should be integrated with other efforts to improve instruction.
- Improvement of professional development, both preservice and inservice, should also have as an objective the long-term systemic improvement of the providers.
- For teachers (whether prospective or experienced) to use technology well, they must have ongoing support and continued access to information on using it to improve teaching and learning.

The current TLCF and TICG authority explicitly permits the use of funds for professional development, both in projects (3134(2)) and as a means of integrating technology into the curriculum and as a factor in long-term planning for technology (3134(4)). Local educational technology plan provisions for the TLCF (3135) require districts to ensure ongoing, sustained professional development for teachers and other education personnel; district plans are to include a list of sources of training. There is, however, no explicit mention of preservice professional development in educational technology. Awards may be made only to local educational agencies, and although consortia including institutions of higher education are explicitly authorized, their purpose is "to provide services for the teachers and students in a local educational agency...".

Current policy calls for a substantial part of the Department's funding for educational technology to go to professional development. States are being encouraged to use at least 30 percent ($127.5 million) of their TLCF allocations for professional development. In sum, of the $698 million appropriated for educational technology for 1999, about $233 million, or about 33 percent, is to be used for professional development, including $75 million for preservice.

Within the TICG program it is difficult to identify how much is used for professional development, although the 1998 competition set a priority for professional development.

We believe that it plays a relatively small part in the early stages of projects and later becomes a more prominent activity. Within the Star Schools program, professional development and direct support for teachers in the context of their classroom has been growing over the years. While the statute requires that 25% of the funds be devoted to instructional activities, the last analysis done showed that 40% was used for instructional programming and the trend has been to greater spending in this area.

The Senate version of Title II of the Higher Education Act permits the use of funds for educational technology, and the Senate mark for 1999 would provide a total of $75 million for the three programs authorized. The Department does not currently plan devote these funds to educational technology, but given the HEA authority, seeking additional authority for preservice education would be duplicative.

An important component of professional development is the dissemination of models and applications that have proven effective in other classrooms, as well as current research findings. It is critical that teachers have access to these tools and have the training to use them. Under the current authority, this task has been performed by the Regional Technology in Education Consortia (the RTECs).

Technical assistance

Technical assistance beyond professional development is a significant factor in increasing the capacity of districts and schools to use technology well. The technical assistance reauthorization team is using a definition used by SRI in the evaluation of the Math/Science Consortia program. Under that definition, technical assistance includes: planning assistance, development assistance, capacity building of clients, facilitation of collaborations and networking, brokering and referrals, professional development, training, communication, community outreach, dissemination, product development, and (the use of) technology and telecommunications.

Other reauthorization teams are considering options for professional development and technical assistance. The options recommended below will need to be considered in the context of those groups' recommendations.

3. Recommended Option

Require a setaside for educational technology in consolidated authority: Embed professional development for **educational technology in a cross-cutting teacher quality authority**, with a required setaside for technology that would be triggered if a district used funding under the technology authority for equipment, software, or telecommunications. Make the setaside waivable if a district receiving funds for equipment, software, or telecommunications can demonstrate that there is sufficient attention elsewhere to professional development in the classroom use of educational technology. Professional development would continue to be supported under the recommended discretionary grant program and under that part of the State grant program over which States would have increased discretion.

Require that substantial funding under the proposed consolidated discretionary grant program (50 percent or more) be devoted to activities aimed at scaling up successful practices. Such activities could include building better links between research and practice and among interested groups; multi-state and other partnership activities; and a strong focus on activities to benefit schools in low-income communities. (See E, Innovation for a description of this part of the proposal.)

a. Pros

This option would integrate technology with the support and planning for quality teaching. Funding for educational technology equipment and the associated professional development would be strongly linked.

Discretionary funding would permit support for innovation in professional development for educational technology and for scaling up and building support for such efforts.

b. Cons

Unless funding for professional development in technology is explicitly authorized, it may be lost in a broad authority. Entry-level training in equipment and software use would not be specified.

Funding for professional development under the proposed consolidated discretionary program and under the State development program could require increased State and local coordination effort.

3. Non-legislative options:

- Encourage States to set priorities for investments in educational technology professional development as part of district TLCF competitions.
- Encourage States to partner with TICG professional development award recipients.
- Encourage States to integrate educational technology in applications for awards under Title II of HEA.
- Encourage States to hold joint TLCF/Goals 2000 competitions for the establishment of professional development schools specializing in professional development in educational technology.
- Focus grantee effort under the TICG on documenting implementation and replication efforts.

4. Other Options Considered and Rejected

a. **Technology authority State setaside:** Provide a set aside, analogous to that in the current Title II, for State Agencies for Higher Education awards to non-profits and **institutions of higher education** charged with both improving the preparation of prospective teachers to use educational technology and the use of educational technology in instruction by teachers already in service.

b. **Flexible State level technology authority setaside:** Require that a specific amount or percentage of the State allocation for educational technology be used for the preservice education of teachers in the classroom use of educational technology through **competitive award by the State**, but leave further requirements and selection of recipients to the State.

c. **Technology or consolidated authority subgrant requirement:** Require **districts** receiving ED educational technology awards to **set aside** a significant portion of funds (30 percent) for professional development, and further require that at least 10 percent of the total be used in cooperation with an institution of higher education that prepares new teachers, in order to directly connect the preparation of teachers to the needs of schools. Alternatively, authorize **professional development schools** that devote a significant level of resources to the use of educational technology in classrooms.

d. Authorize SEAs working with content specialists from institutions of higher education and teachers to develop lesson plans and curriculum units using **educational technology and online resources to meet State content and student performance standards**. Make the plans and units available on State web sites as a resource for teachers.

e. Reserve a proportion of the amount appropriated for **competition among States** to improve their preservice preparation of teachers in the use of educational technology to improve instruction.

f. Continue support for the existing discretionary educational technology programs, differentiating their purposes.

Author: Ellen Conaway at WDCJ02
Date: 9/8/98 10:32 AM
Priority: Normal
TO: Judith Johnson at WDCJ03, Gerald Tirozzi at WDCJ01, Jim Kohlmoos at WDCJ01, Rich Rasa at Wdcoig01, Sylvia Wright, Francisco Garcia at WDCJ03, William Kincaid at WDCJ01, Catherine Jovicich at WDCJ03, Terry Dozier at WDCB02, Phil Rosenfelt at WDCE04, Rafael Ramirez at WDCC01, Patricia Gore, Sue Betka at WDCR02, Thomas Corwin at WDCT02, Marilyn Hall at WDCJ01, Catherine Schagh at WDCJ01, Audrey Smith, Joyce Murphy at WDCJ03, Thomas Pagan at WDCJ01, Ann O'Leary at Wdcb04, David Beaulieu at WDCJ01, Mary Jean LeTendre at WDCJ01, Elois Scott at WDCJ01, Frances Shadburn
Subject: addendum to minutes

As an addition to the minutes from 9/3, please add the following, generated by Rich Rasa.

RE: Tax Credit for Professional Development for K-12 Teachers:

This would be a direct credit against federal tax due up to a certain threshold which could be tied to an average cost (e.g., $5,000) appropriately incurred for K-12 professional development. This would seem to fit if it is true that many teachers actually fund their own professional development costs -- in effect -- the tax credit would reimburse them dollar-for-dollar for these costs and at the same time encourage them to take substantive training each year. Also, the credit would be for all K-12 teachers, thereby promoting skills improvement for teachers at all schools, not just high poverty schools. This would also seem to free up other funds at the state and local or could be matched through a similar credit on state and local taxes. Also, since improving teachers' credentials and their ability to teach in the classroom is a high priority for the public, most taxpayers would probably support such a tax credit. Just an idea -- hope it is helpful. Thanks for helping us think outside the box!

ISSUES RELATED TO STATE COMPETITION PROGRAMS

From experience with Goals 2000 and the Technology Literacy Challenge Fund, I have identified a few issues that need to kept in mind as we consider whether to operate all or a portion of Part II as formula to state, competitive state to district program.

1. There is pressure on states to spread money around, more in some states that in others. It is very difficult to get states to really concentrate funds.

2. State priorities are not always consistent with ours or with those in the statute. Governors and Chiefs often see Federal dollars they control as a fund to support their ideas. For instance, CA one year sent Goals money to all districts for professional development in reading for grade 1-3 teachers. While not of itself bad, it is not the comprehensive reform that Goals 2000 is to foster. Alabama and other states have used Goals 2000 funds almost exclusively for technology that, while tied to comprehensive reform on paper, does not ensure that, at district and school level, it is being attended to.

3. States tend to give one or, at best, two year grants, resulting in use of funds for short range activities or purchases rather than long range reform. Part of this is to spread funds around over time (everyone gets it eventually) and part is due to uncertainty over continued Federal support.

4. Whether or not a district is funded may depend more on the ability of grant writer than quality of an implemented program. (this is true of our competitive grants as well).

5. Large cities believe that states shortchange them. The Council of Great Cities Schools firmly believes this, and there is some evidence for the belief in certain states. We had to get PA and WI to raise their maximum grant awards in the technology fund since the ceiling effectively punished those two large districts. We had a similar circumstance in CA that the state corrected before in put the policy into place. New York had a great deal of difficulty getting out its Technology funds out because the amount it effectively set aside for NY city was opposed by members of the state legislature because they thought it was too much.

6. In some states competition may not make sense. Maryland has 24 districts, all good size, and gets enough funds to support all of them. Nebraska has 500 districts, mostly small,. Competition may make sense here, since there is not enough money to around. Wyoming has 19 small districts and I don't quite know where it fits.. I am not certain that it makes sent to treat all of these states in the same manner.

More on this later.

from Tom Fagan - 9/4/98