Connecting our Schools to the Information Superhighway:  
JPL Efforts and the National Information Infrastructure 

Insights from the January 30, 1996 
U.S. Advisory Council’s Report to the 
President of the United States (As it pertains to Education) 

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Association of Higher Education Institutions of Thailand 

Jet Propulsion Laboratory 
California Institute of Technology 
Pasadena, California
U.S. Advisory Council for the National Information Infrastructure (NII)

History of Council

- Presidential Order - Jan. 1994
- Two year undertaking to develop NII Strategy
- Members were accomplished telecom individuals from broad spectrum

Recommendations in five areas

- Universal Access and Services
- Education and Life Long Learning
- Electronic Commerce
- Privacy and Security
- Intellectual Property
committees. Leadership will be at local, state, and national levels to provide direction and sustain momentum. "National committees will be at local, state, and national levels to provide direction and sustain momentum."

"Into the curriculum." High-quality professional development for teachers and district leaders and the value of technology and new curriculum changes on the teachers' ability to integrate technology into the curriculum."

(Chairman & Company Report Prepared for the U.S. Advisory Council)

Superhighway

Connecting K-12 Schools to the Information Superhighway

Communities to I-nc. Region 51 per Superhighway

The Kickstart Initiative - Connecting America's Communities to Opportunity - Releasing the Promise of the Information Superhighway

A Meeting of Opportunity - Releasing the Promise of Communities, Presented in Three Reports.

Recommends to the President, Vice President

NII OFFERS ACCESS TO INFORMATION, SERVICES, AND PEOPLE

- Up to the minute news reports
- Electronic libraries of government documents
- Electronic bulletin boards for debates of educational issues
- Multimedia "edutainment" products
- On-line encyclopedias
- National Geographic's kids Network
- Access from home to school for after hours work

Access to a broad spectrum of Human Resources

- Teachers at other schools and colleges
- Experts from museums, libraries, archives and research institutes
- Other students from around the world
POTENTIAL BENEFITS ARE SIGNIFICANT

- By the year 2000, as much as 60% of American jobs may require such technology skills.

- Provides easier, faster and more efficient access to courseware and enhances computer assisted instruction.

- 254 controlled studies concluded appropriate use of technologies reduced time needed to master certain types of knowledge by 30%.

- Supports new teaching methods that emphasize critical thinking and investigative skills.
OPTIONS ARE AVAILABLE TODAY -- AND AFFORDABLE

(More is required than just connecting to the internet)

- Local area networks to link computers, video equipment, and other hardware
- Electronic content in the form of multimedia courseware
- Educational video programs
- On-line services
- Professional development programs for teachers and other school professionals
- Ongoing technical support
Few K-12 schools have assembled all required elements of a technology infrastructure:

- While 50% of schools have LANs, less than 10% connect all classrooms, most are administrative.

- Only 12% of classrooms have telephones.

- Cost of connecting a computer lab with 25 workstations to the NII in every K-12 school by the year 2000 would consume 1.5% of the currently projected education budget for 2000.

- Current K-12 spending on technology as a benchmark is 1.3%, but is not evenly distributed throughout all schools.
Community organizations
through partnerships with corporations
innovative schools have secured funding

illatives from the public and private sectors
reprogram existing funds and education
through a combination of cost reductions
should be possible to reallocate the funds to the

experiences launched or ide mortality funding for a first
technology will ideally only others have yet a
many schools have experimented with
budget at national, state, and local levels
numerous pressures are squeezing education

funding

Three challenges must be addressed
2) DEVELOPMENT OPPORTUNITIES FOR TEACHERS AND OTHER SCHOOL PROFESSIONALS

- 50% of teachers have no computer experience
- Currently little incentive to motivate teachers to build and apply technology skills

3) BROAD ASSORTMENT OF HIGH QUALITY COURSEWARE

- Widespread commitment to connect to NII would accelerate growth of high quality courseware
- Slow and cumbersome public school budgeting and procurement processes make it difficult for courseware developers to enter public school market
Connecting public K-12 schools will take time and leadership

Each school must make commitment and decisions on:

- How much technology to deploy (one lab - every classroom - every desktop?)
- How fast - lab level connection by 2000 - build out by 2005
- Identify adequate funding both for installing technology and support
- Teachers will need the opportunity, incentive and support to experiment, master, and learn to adopt and adapt information technology as a basic teaching tool.

In each school and district, it will be necessary for local leaders to communicate a compelling vision, set clear goals and generate enthusiasm for connectivity.

Deployment must be "bottom-up" to gain commitment of teachers, principals, school boards, parents and other community members.

Schools will need help in marshaling resources and moving forward. Strong leadership has proven to be a key success factor.
Establish a long-term partnership between science education and 教师资格认证.

Effective use of core in local colleges.

Teacher and Faculty Professional Development in K-12 Science Education.

Response to need for long-term and coherent implementation of the NASA Strategic Plan for Education.

Purpose of TIP:

Teacher Merit Program (TIP)

Gana's area.

educational leadership in the area's School.

community of institutional leaders in science education, expand, expand, and support an ever-growing community.

NASA/JPST Alignment with Teacher Education.
OBJECTIVES OF TIP:

Provide attractive opportunities for teachers to:

- Learn how modern technologies can be used to embed an element of discovery within the classroom

- Acquire leadership training and experiences to become facilitators, planners, and consultants for science education

- Incorporate investigation and inquiry into curricula using national and state guidelines

- Increase participation of historically underrepresented teachers in urban schools

- Develop a long term follow-up program to keep past and current interns abreast of recent discoveries
CONCLUSION

"The United States stands today in the midst of one of the great revolutions in recorded history: the Information Age. The National Information Infrastructure provides enormous benefits in education, economic well-being, and quality of life."


The effective use of the information infrastructure and technology in education will, as in no previous time, open up the process of discovery.