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REPORT TO THE PRESIDENT
ON THE USE OF TECHNOLOGY TO STRENGTHEN
K-12 EDUCATION IN THE UNITED STATES

PRESIDENT'S COMMITTEE OF ADVISORS
ON SCIENCE AND TECHNOLOGY

PANEL ON EDUCATIONAL TECHNOLOGY

MARCH 1997



Mike - Did Poruce ever send
you this? Is there anything
we can/should do or tell
the President in response?

Elena

REPORT TO THE PRESIDENT
ON THE USE OF TECHNOLOGY TO STRENGTHEN
K-12 EDUCATION IN THE UNITED STATES

THE PRESIDENT HAS SEEN
Breed 6-10-97

we should make
sure we are implementing
our plan to look ahead
up to the future in
a way that takes that into
account, and that the
president make sure we make
belong teacher training, software
etc. — PR

Copied
Reed
LOS

PRESIDENT'S COMMITTEE OF ADVISORS
ON SCIENCE AND TECHNOLOGY
PANEL ON EDUCATIONAL TECHNOLOGY

MARCH 1997

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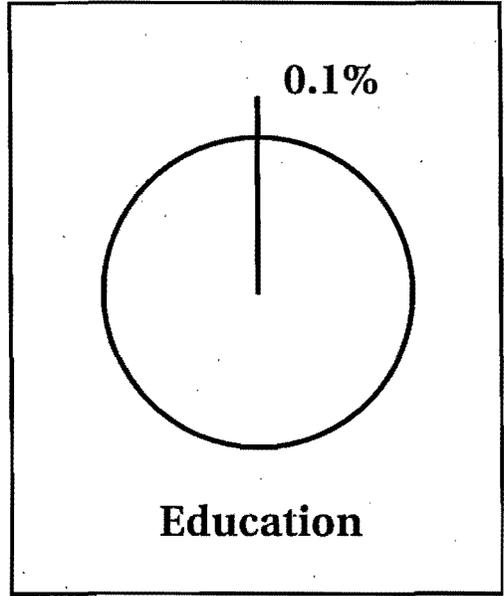
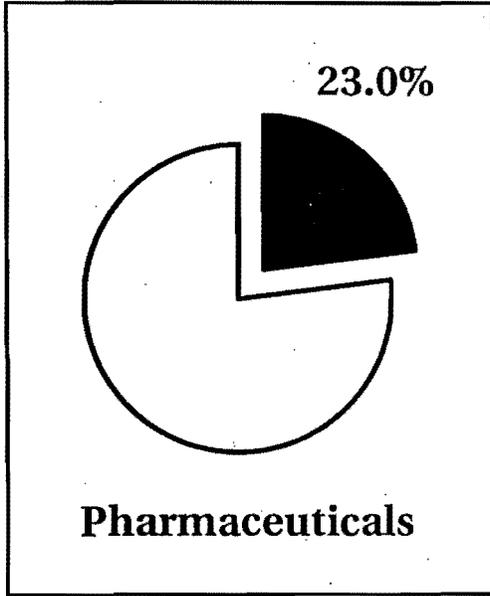
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THE WHITE HOUSE
WASHINGTON

MT D & Suen 7/11-12

Energy R&D →



*470 billion more
per. year*

**Fraction of Expenditures
Allocated to Research**

EXECUTIVE OFFICE OF THE PRESIDENT
PRESIDENT'S COMMITTEE OF ADVISORS ON SCIENCE AND TECHNOLOGY
WASHINGTON, D.C. 20502

June 23, 1997

Honorable Bruce Reed
Assistant to the President for Domestic Po
Domestic Policy Council
2FFL/WW, The White House
Washington, DC 20500

Dear Honorable Reed:

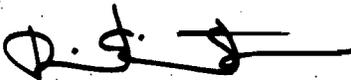
In support of the Clinton Administration's commitment to prepare our children for the challenges with which they will be confronted in the twenty-first century, the Panel on Educational Technology was organized in April 1995 under the auspices of the President's Committee of Advisors on Science and Technology (PCAST) to provide advice to President Clinton on matters related to the application of information technologies to K-12 education in the United States. Its findings and recommendations, which are incorporated in the enclosed report, are based on a review of the research literature and on written submissions and oral briefings from a number of academic and industrial researchers, practicing educators, software developers, governmental agencies, and professional and industry organizations involved in various ways with the application of technology to education. Having recently presented this report to President Clinton, I have taken the liberty of forwarding a copy for your review.

On the chance that you may not have the time to read either the full report or its five-page executive summary, I would at least like to draw your attention to the Panel's sixth recommendation, which its members felt to be particularly important. Briefly stated, the Panel concluded that a large-scale program of rigorous, systematic research on education in general and educational technology in particular will ultimately prove necessary to ensure both the efficacy and cost-effectiveness of technology use within our nation's K-12 schools. Finding that less than 0.1 percent of our nation's expenditures for elementary and secondary education are currently invested to determine which educational techniques actually work, and to find ways to improve them—an extremely low level relative to comparable ratios within the private sector—the Panel recommended that this figure be increased over a period of several years to at least 0.5 percent, and sustained at that level on an ongoing basis.

Because no one state, municipality, or private firm could hope to capture more than a small fraction of the benefits associated with a significant advance in our understanding of how best to educate K-12 students, the Panel concluded that such funding will have to be provided largely at the federal level in order to avoid a systematic underinvestment (attributable to a classical form of economic externality) relative to the level that would be optimal for the nation as a whole. While recognizing the difficulty of securing such funding within the framework of current efforts to balance the federal budget, the report draws attention to the danger that, in the absence of an adequate commitment to educational research funding, we could not only compromise our children's future ability to compete within the global marketplace, but also jeopardize current efforts to control public spending on an ongoing basis by wasting tens of billions of dollars each year on educational techniques whose cost-effectiveness is grossly suboptimal.

If you should have any questions or comments regarding the subject matter of this report, or if you should wish to obtain additional copies for your own use or for distribution by our office to any of your colleagues, please feel free to contact Ms. Garrett Deckel, my assistant for PCAST-related activities, either by telephone (at 212-478-0608) or by e-mail (to garrett-deckel@deshaw.com). (The report is also accessible through the White House web site, or directly at <http://www.whitehouse.gov/WH/EOP/OSTP/NSTC/PCAST/k-12ed.html>.) Postal communications directed to either of us will be received most quickly if sent to D. E. Shaw & Co., 120 W. 45th Street, 39th Floor, New York, NY 10036.

Sincerely,



David E. Shaw, Ph.D.

Chairman

Panel on Educational Technology

President's Committee of Advisors on Science and Technology

cc: michael Cohen



CONSORTIUM FOR POLICY RESEARCH IN EDUCATION

University of Pennsylvania • Harvard University • Stanford University
University of Michigan • University of Wisconsin-Madison

September 9, 1995

David E. Shaw
D. E. Shaw & Co.
120 W. 45th Street, 39th Floor
New York, NY 10036

Dear Mr. Shaw:

While I have not yet had a chance to read your Commissions report on schools and technology, I did read your letter and noted the cost recommendations that you made.

I would like to comment on what you wrote.

Although I have not done extensive research, I have worked closely with two technology intensive schools designs that are part of the New American Schools -- the Co-NECT design of Bolt, Bernack and Newman in Cambridge, MA, and the Modern Red Schoolhouse design, formerly of the Hudson Institute and now in Nashville. I analyzed the costs of these programs, including their technology costs. What emerged was a technology cost -- purchase of computer hardware, software and then ongoing maintenance and upgrading -- that equaled about \$125,000 per year for a school of 500 children, which is about \$250 per pupil. At a national average spending for current operating purposes of around \$6000 per pupil, that equals about 4 percent of the operating budget. Assuming the school site expenditure is \$5000 or that \$6000, that equals about 5 percent of the school site budget. I have also found that schools/districts need to consider spending at this level each year, first to purchase the needed equipment over a 3-4 year period, and then for maintenance and then for inevitable upgrading; when schools have not budgeted for this level of ongoing expense, they find their equipment both breaking down and becoming out of date. So I have concluded that something like 4 percent of the district budget or 5 percent of the school site budget needs to be spent annually for computer technologies. These figures are both larger than your Commission recommended, and need to be thought of as coming from local and state sources, as they are most appropriately thought of as ongoing expenses. In related research, I also found that many schools in America have resources that can be reallocated to cover these technology costs (see Allan Odden and Carolyn Busch, forthcoming, Financing Schools for High Performance: Strategies for School Based Financing, San Francisco: Jossey Bass).

In addition, the private sector Edison Project school also spends in the same arena, if not at a higher level, equipping schools with computer technologies

These figures need to be augmented by the technology infrastructure of building wiring, a wide area network within the district, etc., most of which are one time costs, and which could be assisted by federal dollars.

The above figures also assume a school is starting from scratch, which often is not the case. At any rate, the expenses are larger than 0.1 percent of the budget, and even larger than 0.5 percent of the budget.

Your or your staff might want to follow through with the above programs for more detail on computer and related technology costs.

Cordially,

A handwritten signature in cursive script, appearing to read "Allan Odden".

Allan Odden
Professor & Co-Director
Consortium for Policy Research in Education

THE WHITE HOUSE
WASHINGTON

Mr. & Mrs. S. W. 7/11/12

Energy R&D →