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Record Group/Collection: George H.W. Bush Presidential Records
Collection/Office of Origin: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: Education Files

OA/ID Number: 62032
Folder ID Number: 62032-004

Folder Title:
Education: General [2 of 4] [1992]

Stack:

Row:

Section:

Shelf:

Position:

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TYPE: ACTION
ORIGINATOR: 02

STATUS I

DOCUMENT NUMBER: 9202687
DIRECTORATE STATUS

FROM: SPIGARELLI, Cathy A.R.

logged

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 09/01/92

SUBJECT: SHE IS WRITING TO EXPRESS HER FRUSTRATION OVER WHAT
APPEARS TO BE A LACK OF CONCERN FOR AMERICAN
GRADUATE STUDENTS AS COMPARED TO FOREIGN STUDENTS IN
AMERICAN UNIVERSITIES.

DIRECTORATE
ASSIGNED: INTERNATIONAL/POLICY

STAFF
ASSIGNED: ~~AL~~ *Al* (*Coordinate w/ Charles*)

ACTION
REQUIRED: FOR DAB'S SIGNATURE

STAFF
ACTION: *FOR DAB's signature*

OSTP DUE DATE: 09/23/92
DATE COMPLETED: SENDER'S DUE DATE:
STAFF DUE DATE 9/23/92
DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #:

CONTACT PERSON:
PHONE:

EXT: *has*

REMARKS:



*Al - Charles has
fielded a number
of similar letters
on the part
of 9/10/92*

OSTP RECEIVED: 09/09/92
FILE: P-EDUCATION

DEPT RECEIVED:

CENTRAL FILES:

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

September 24, 1992

Dear Ms. Spigarelli:

Thank you for your letter of September 1, 1992 regarding the impact of foreign graduate students in American universities.

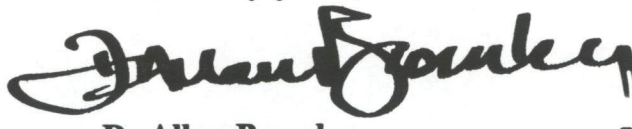
Your determination, commitment, and willingness to sacrifice for advanced education are impressive and certainly very much in the national interest. I deeply regret the problems of financial support you are encountering. The following comments are based on the information available to us and on staff inquiries into the matter.

Programs supported by the Federal Government do not provide support for foreign graduate students in preference to Americans. The policies and operations of individual programs, such as those at the University of Louisville, are a responsibility of the individual universities carried out in accord with applicable local regulations. I understand that at the University of Louisville, as is generally the case across the nation, support for graduate students comes from a variety of sources. Each source imposes its own requirements, criteria, and guidelines. For example, whether a student is officially enrolled in a doctoral program or a masters program frequently makes a difference regarding support, as there is a tendency to give higher priority to doctoral students. In some of these situations, it may be that a foreign student meets the requirements more readily than counterpart Americans. On the basis of inquiries made at the University of Louisville, I very much encourage you to revisit the entire matter of support with faculty advisors and administrators of your program.

Meanwhile, rest assured that the situation you have described has been noted and that members of the Office of Science and Technology staff and I will assimilate it into the policy process. While I cannot assure you that any immediate action will be forthcoming

that will affect your situation, we are all very sensitive to the need of providing appropriate incentives for Americans to embark on and persist in the very demanding course of doctoral study in a scientific discipline.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "D. Allan Bromley", written in a cursive style.

D. Allan Bromley
Director

cc: Dr. Leonard Waite
University of Louisville

Ms. Cathy A. R. Spigarelli
8918 Deer Path Circle
Louisville, KY 40220

2687

RECEIVED

September 1, 1992

92 SEP 9 P7:11

Dear Mr. Bromley:

I am writing because I have recently come face to face with a major problem in our universities that has contributed to the lack of technical, skilled professionals in America today. The problem is that America is no longer educating Americans.

I am a 30 year old American female. I have a Bachelor of Science degree in Engineering and for the last two years have been pursuing a PhD degree in Toxicology at the University of Louisville. I have a 3.85 GPA and have been told on many occasions that I am "the best student in the department". In other words, I am a very capable student and I work extremely hard! My point in telling you this is to illustrate that I deserve some incentive to continue with my education. It is in the best interest of America that I continue with my education. However, America is not interested in educating me. America would rather educate foreigners and I know of this first hand.

There are 12 students in our department, Pharmacology and Toxicology, at the University of Louisville. Three out of 12 students are American citizens and the other 9 students are foreigners from China, Iran, and India. All of the foreign students are receiving between \$12,000 - \$20,000 per year in fellowship money to come to America and be educated. I have, to date, not received a fellowship. In fact, this year, I practically had to beg in order to get my tuition paid while theirs is paid automatically. I absolutely do not understand this! How often have we heard in the last few years about how poorly America is doing in the area of education?!? Well, here is an American with the ability and desire to achieve a higher level of education, but America has not provided the means or incentive for me to do so. As an engineer, I was making \$40,000/year and could easily do so again, but instead I choose to pursue a higher education and if not for the financial support of my husband, would never be able to do so! Why is there such incentive for foreigners to come to America and be educated before Americans when it, to a great degree, detracts from the ability of America to educate Americans?

I think that this type of situation is happening in all the Universities across America and it is very disturbing to me. I believe that this is something the general public and elected officials need to be aware of, so that perhaps something can be done so that America starts educating Americans first. What can you do to correct this?

I can be reached at the following address:

Cathy Spigarelli
8918 Deer Path Circle
Louisville, KY 40220

Sincerely,

Cathy A.R. Spigarelli

Cathy A.R. Spigarelli

Logged

"Document Control"

TYPE: ACTION DOCUMENT NUMBER: 9202478
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

FROM: GOLDIN, Daniel: NASA

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 08/19/92

SUBJECT: HE IS FORWARDING A COPY OF THEIR EDUCATION PROGRAMS
REPORT FOR 1991. COMMENTS ARE WELCOME.

DIRECTORATE STAFF
ASSIGNED: INTERNATIONAL/POLICY ASSIGNED: AB

ACTION STAFF
REQUIRED: REVIEW FOR DAB ACTION: Review for DAB

SENDER'S DUE DATE:
OSTP DUE DATE: 09/09/92 STAFF DUE DATE 9/9/92
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:
REMARKS: ENCLOSURES TO INTERNATIONAL.

OSTP RECEIVED: 08/26/92 DEPT RECEIVED:
FILE: P-EDUCATION
CENTRAL FILES:

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

September 21, 1992

MEMORANDUM FOR D. ALLAN BROMLEY

THROUGH: J. THOMAS RATCHFORD

FROM: ALPHONSE BUCCINO

SUBJECT: REVIEW OF REPORT ON NASA-INDUSTRY EDUCATION
INITIATIVE

This report referred to above describes a voluntary cooperative effort involving NASA and 26 of its major contractors to join the concerted effort called for by President Bush in AMERICA 2000. Development of the NASA-Industry Initiative (NIEI) also received impetus from the FCCSET/CEHR effort calling for the application of Federal resources, where possible, to reform mathematics and science education in the U. S.

The first step of the initiative was to compile an inventory of NIEI education programs and assess the level of support. The inventory utilized the FCCSET/CEHR pattern and categories. The focus of the report is on the data emerging from this first step. As such, it is quite impressive:

- o Nearly 600 programs were reported in this initial survey.
- o Total financial contributions average a little over \$100 million per year.
- o More than 92,000 employees are identified as contributing to the various programs.
- o Nearly 5 million individuals (including students and teachers) are reported as directly benefitting from NIEI activities.

A letter to Dr. Goldin, NASA Administrator is attached in the event you may wish to use it.



National Aeronautics and
Space Administration

Washington, D.C.
20546

Office of the Administrator

August 19, 1992

The Honorable D. Allan Bromley
Assistant to the President
for Science and Technology and
Director, Office of Science and
Technology Policy
Executive Office of the President
Washington, DC 20506

Dear Dr. Bromley:

Enclosed you will find a copy of the NASA-Industry Education Initiative--*Education Programs Report 1991*. This report is a product of a unique effort on the part of NASA and a number of its contractors to pool knowledge and efforts directed toward improving education in America. The NASA-Industry Education Initiative responds to the *National Education Goals* and to the President's *AMERICA 2000* strategy.

The enclosed report presents an initial inventory of education programs supported by the NASA-Industry Education Initiative participants. To make it more useful, the inventory was patterned after that used by the FCCSET Committee on Education and Human Resources. The report provides a foundation for the next critical step of the Initiative--enhancing government-industry cooperation, sharing information and resources, and coordinating programs and reform efforts to improve our Nation's education system. Each of the participants is committed to continuing this process in the belief that cooperative contributions to American education will be greater than the sum of the individual efforts.

I welcome your comments on the report and the Initiative.

Sincerely,

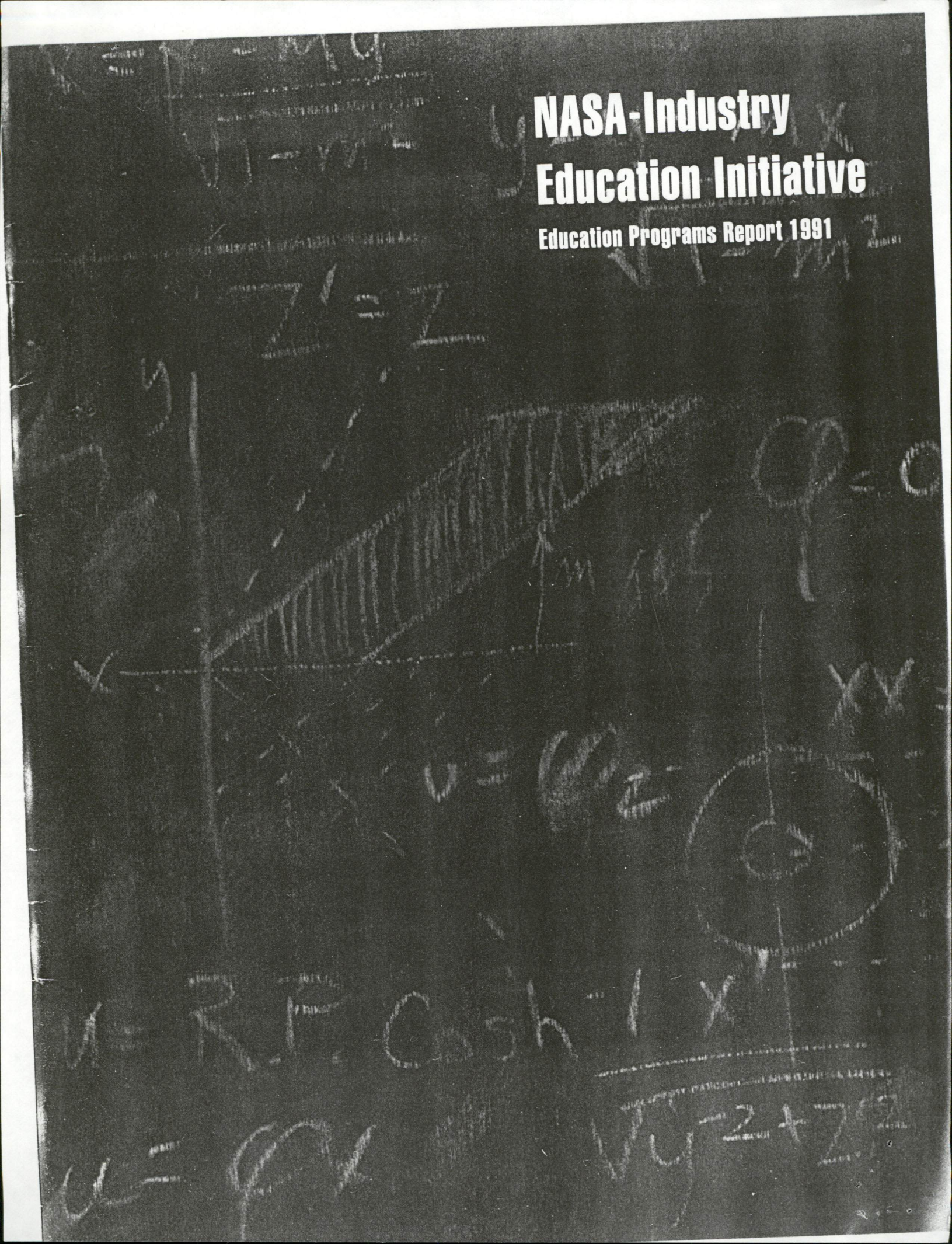
A handwritten signature in black ink, appearing to read "Daniel S. Goldin".

Daniel S. Goldin
Administrator

Enclosure

NASA-Industry Education Initiative

Education Programs Report 1991



Logged

"CORRESPONDENCE TRACKING"

TYPE: ACTION DOCUMENT NUMBER: 9123544
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

FROM: KELLY, Shanon

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 08/15/91

SUBJECT: RE: THE VICE PRESIDENT'S SPEECH ON TOO MANY LAYERS
AND THE NEED FOR BROAD BASED MATH LITERACY IN
AMERICA.

DIRECTORATE STAFF
ASSIGNED: INTERNATIONAL/POLICY ASSIGNED:

ACTION STAFF
REQUIRED: DIRECT REPLY/AS APPROPRIA ACTION:

SENDER'S DUE DATE:
OSTP DUE DATE: 09/04/91 STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO:

WHITE HOUSE TRACKING #: CONTACT PERSON:
REMARKS: PHONE: EXT:



OSTP RECEIVED: 08/21/91 FILE: P-EDUCATION
DEPT RECEIVED:

Re: Vice Presidents'
speech on too many
languages and the need for
a broad based math literacy in America.

8-15-91

Dear Dr. Bramley:

This past spring I wrote the President on
the importance of math literacy for our Republic's
economic health and military welfare, and I
appreciated your letter.

Mr. Quayle's speech on the legal
profession compels me to write you. I suspect
~~that~~ this scholarly profession attracts a lot of
talented, ambitious, and imaginative people
who had uninspiring math teachers or who
did not have parents with a math background
to push them into science and math related
fields. Strong math and computer skills
among our young will correct this trend.
What our republic needs is a "war" on
math illiteracy for all ages. The First
Lady and Billie have a lot of media appeal.
Imagine commercials with them inviting
adults to take adult education courses

91 AUG 16

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CHIEF OF THE
DIRECTOR

in high school math and higher so that they can help their children and themselves!! Mrs. Bush could encourage literary Volunteers of America to include math as a language. Mrs. Bush could make a TV appeal to the nation's free libraries so that math corners peopled with math literary volunteers (retired engineers, etc) can be made available to the public. Maybe Mrs. Bush could write another "Millie" book describing basic formulas in a catchy fashion. A cartoon starring Millie is an idea, too. Walt Disney Studios could help. Sincerely
Shan Kelly

Logged

"Document Control"

TYPE: ACTION DOCUMENT NUMBER: 9202635
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

FROM: ZELLER, Gary: ZELLER INTERNATIONAL

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 08/14/92

SUBJECT: HE IS WRITING TO TRY TO ESTABLISH A WHITE
HOUSE/PRESIDENTIAL SCIENCE AWARD FOR KIDS IN
CONJUNCTION WITH HIS TELEVISION PROGRAM.

DIRECTORATE STAFF
ASSIGNED: INTERNATIONAL/POLICY ASSIGNED: AB

ACTION STAFF
REQUIRED: AS NECESSARY ACTION: as necessary

SENDER'S DUE DATE:
OSTP DUE DATE: 09/14/92 STAFF DUE DATE 9/14/92
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #: CONTACT PERSON:
REMARKS: PHONE: EXT:



OSTP RECEIVED: 09/01/92 DEPT RECEIVED:
FILE: P-EDUCATION
CENTRAL FILES:

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

September 21, 1992

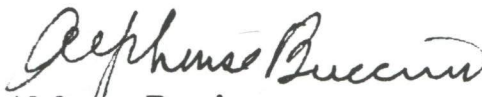
Dear Dr. Zeller:

Thank you for your letter of August 14 regarding a White House award JUST FOR KIDS up to 17. Dr. Bromley has asked me to reply.

Your proposal is quite interesting. In fact, similar ideas have been advanced from several sources and are currently under consideration. However, the decision to establish an award of the kind you suggest must occur only after careful review. Several factors must be taken into account, including such things as the relation to and impact on other programs oriented to science and technology for young people (e.g. the Westinghouse Science Talent Search program) and the feasibility of maintaining the significance of the award over the long term. These proposals will remain under consideration and review. Hopefully, some determination along the lines you suggest will occur in the future.

In any case, please accept our thanks and best wishes for your efforts and success in engendering the creative spirit in our youth. The work of the Dr. Z Workshop in this regard is greatly appreciated.

Sincerely yours,


Alphonse Buccino
Education Advisor

Dr. Gary Zeller
Zeller International
Main Street, Box Z
Downsville, NY 13755

2635

August 14, 1992

RECEIVED

92 SEP 1 P 5: 55

OSTP
MAIL ROOM

D. Allan Bromley
Assistant to the President for
Science and Technology
17th & Penn. Ave. N.W.
Washington, D.C. 20500
202-456-1414

Dear Mr. Bromley,

My T.V. program, The Dr. Z Workshop™ uses special effects as a teaching aid, its emphasis is to explain via a creative format the scientific chemical and engineering components involved with behind the scene's magic. Finding a method/technique that reaches and holds the attention and communicates with a young audience is complex. Special Effects is a multi-disciplined subject, its range of technology is wonderfully laced with surprises, creativity and imagination.

The Workshop uses creative concepts to teach science. It communicates in a fun filled refreshing way. The package outlines our objectives, and initiatives. Our aim is to encourage kids to stay in school - SCHOOL IS COOL !! and The Dr. Z Workshop has many messages = Discipline, ecology, inventing, entrepreneurial ideas !!. I teach in a fun filled playful way, I explain how to do the impossible! The Dr. Z Workshop is an inspiration.

I have this vision! its an idea that the Dr. Z Workshop would like to implement and co-sponsor. I envision a Presidential/ Senior Scientist Award from The White House for significant scientific accomplishments pertaining to science. JUST FOR KID'S up to 17 The Award will be signed by the President and Senior Scientist. The Award includes a trip to the White House, perhaps a lunch and award ceremony at the Smithsonian Museum..

We would like to screen applicants and have inventive students on our program. Each month we would highlight an invention, a research report, a contribution to mankind, Industry, Ecology. The talent search is for an American youngster who becomes a good role model. We could collaborate on this point defining who, what, and why.

ZELLER INTERNATIONAL, MAIN STREET, BOX Z, DOWNSVILLE, NY 13755
FX: 607/363-2071 NY: 607/363-7792 LA: 818/995-4948 FL: 407/629-2905

ZELLER INTERNATIONAL

The significant Award from The White House should include the issuance of a Free No Cost "PATENT". Also signed by the President and Senior Scientist. That the importance of this Free Patent award will encourage young inventors to achieve exposure and the opportunity to possibly sell/assign their patent to a major company for a fee!! This earning possibility could be used for continuing research, special courses, science camps, or money for college.

When kids are questioned about a patent, its purpose and what it means ? They typically respond in an unknowing gesture. Many cannot spell the word, many think a patent is only for Big Companies. This is counterproductive.

We need to start this process of invention and idea protection young. We need to blend/change the patent award procedure. This concept of government sponsoring Little Scientists is correct, it would spur innovation, it would have marketing relevance.

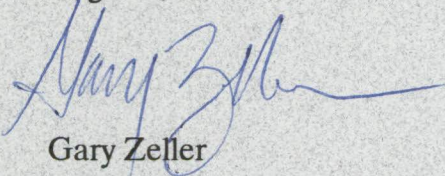
I was asked recently by a 12 year old, why we don't make many kinds of motorcycles in American , like Japan !! I encouraged this chap to invent/engineer a motorcycle that he could make in America. OH! , How do you do that ?

I think we can change this and in doing so, the Dr.Z Workshop will lend a sponsoring hand, Do you think our government can lend a hand in this SPECIAL SCIENTIFIC AWARD. ?

We need the creative spirited energy of our youth ! We must encourage a team interaction between our government the American youth who are our salvation and future. We must honor the young !!

Looking forward to your thoughts.

Regards,



Gary Zeller

"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9202387
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS

FROM: SCHRIESHEIM, ALAN: ARGONNE NATIONAL LABORATORY

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 08/06/92

SUBJECT: PHOTOGRAPHS OF DR. BROMLEY AT ARGONNE- ENCLOSED
PUBLICATION DESCRIBING EDUCATIONAL PROGRAMS

DIRECTORATE STAFF
ASSIGNED: ASSIGNED:

ACTION STAFF
REQUIRED: ACTION:

SENDER'S DUE DATE:
OSTP DUE DATE: STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley
INTERNATIONAL/POLICY

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:
REMARKS:

OSTP RECEIVED: 08/14/92 DEPT RECEIVED:
FILE: P-EDUCATION
CENTRAL FILES:

Improving mathematics and science education in America has emerged as a major concern of the nation's opinion leaders. That is why I thought you would be interested in the variety of support to education provided by one of your federally funded centers of research and development.

A handwritten signature in cursive script, reading "Alan Schriesheim".

Alan Schriesheim, Director and CEO
Argonne National Laboratory

ARGONNE NATIONAL LABORATORY

9700 SOUTH CASS AVENUE, ARGONNE, ILLINOIS 60439 - 4832

2001
Office of the Director

August 6, 1992

Dr. D. Allan Bromley, Director
Office of Science and Technology Policy and
Assistant to the President for Science
and Technology
Old Executive Office Building
Washington, D.C. 20506

Dear Allan:

It was a pleasure to have you at Argonne again, to show you some of our work in progress and to give our staff a chance to hear your colloquium address.

To have a knowledgeable, interactive scientist like you talk with our people helps to renew faith throughout the Laboratory that science is well represented in the Washington halls of power. I hope you could sense that, as I did, especially in the question and answer period following your colloquium.

Enclosed are a few photo mementos of the day. I'm also including a publication describing our educational programs which was published in July, 1991. On the basis of our discussion, we are re-examining the distribution to make sure we cover any areas that we missed on the first distribution.

Thank you again for coming to Argonne.

Very truly,



Alan Schriesheim
Director

AS:Hj
Enclosures

THE WHITE HOUSE
WASHINGTON

September 23, 1992

Dear Alan:

Many thanks for the photographs from my recent visit to Argonne; they provide a wonderful memento of the occasion.

It was a very real pleasure to have the opportunity to get away from Washington and to be able to see some of the excellent research that you have underway at the laboratory. It was particularly pleasant to be able to chat with you about so many topics during the luncheon and as I mentioned there, I was much impressed with the programs to which I was exposed. You are to be congratulated for the outstanding job that you have done in changing the entire ambiance in Argonne into one that is fully cognizant of the laboratory's national responsibilities.

I was pleased also to receive the publication concerning your educational programs where again you are playing a leadership role.

On a more personal note I wonder if you have made your decision yet concerning the environmental position in your office that we discussed during my visit. Whenever your travels bring you to Washington please do let me know. I would be delighted to have an opportunity to take you to lunch at the White House Mess.

With all best wishes,

Sincerely yours,



D. Allan Bromley
The Assistant to the President
for
Science and Technology

Dr. Alan Schriesheim
Director
Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439

"Document Control"

TYPE: INFORMATION

DOCUMENT NUMBER: 9202288

ORIGINATOR: 02

STATUS C

DIRECTORATE STATUS

FROM: STARKWEATHER, KENDALL: INTERNATIONAL TECH EDUCATION ASSOCIATION

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 07/27/92

SUBJECT: ENCLOSED PACKAGE OF INFORMATION REGARDING MATH,
SCIENCE, AND TECHNOLOGY EDUCATION.

DIRECTORATE STAFF
ASSIGNED: ASSIGNED:

ACTION STAFF
REQUIRED: ACTION:

SENDER'S DUE DATE:
OSTP DUE DATE: STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

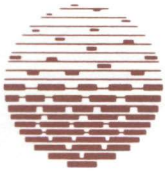
COPIES TO: INTERNATIONAL/POLICY
D. Allan Bromley

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:
REMARKS: INFORMATION PACKAGE FORWARDED TO DR. BROMLEY

OSTP RECEIVED: 08/10/92
FILE: P-EDUCATION

DEPT RECEIVED:

CENTRAL FILES:



INTERNATIONAL
TECHNOLOGY
EDUCATION
ASSOCIATION

2288

KNS 92-576

July 27, 1992

The Honorable D. Allan Bromley
Assistant to the President for
Science & Technology
Director, Office of Science &
Technology Policy
Washington, D.C. 20506

MAIL ROOM

92 AUG 10 2:28

RECEIVED

Dear Dr. Bromley:

Thank you for forwarding a copy of the recent report, SCIENCE AND TECHNOLOGY. I found the material most helpful, and congratulate you and your colleagues on your accomplishments to date.

I was particularly interested in the section dealing with math, science and technology education because of the particular focus on our field. The report indicates that little is known about technology education by those who wrote it. This is understandable. The field developed during the 1980's into what is known today in our schools as technology education. The following information is offered to familiarize you with current developments.

1. There are over 40,000 technology teachers nationwide, not including university personnel or elementary teachers who are dealing with the application of technology in the solution of problems facing society.
2. The majority of states have curriculum guides and materials designated for technology education. They cover courses such as manufacturing, transportation, communications and more.
3. Accrediting groups such as NCATE (at the higher education level) and others (at various education levels) have standards or criteria for technology education.
4. Technology education is vital in today's education, because of its relationship to math and science, as well as the working world.
5. National legislation has been introduced to enhance technology education in our schools. Specific information can be provided upon request.

To embellish on the development of technology education in our existing schools, we now have courses actually dealing with technology that will strengthen the math, science, technology interface. Our biggest problem has been the visibility of technology education to key decision makers. Our goal is to have technology education recognized as a valuable addition to the educational process.

Again, thank you for sharing your report with us. We shall use the information to further strengthen our field in relationship with math, science and engineering education.

Best regards,

Kendall N. Starkweather

Kendall N. Starkweather, Ph.D.
Executive Director

Enclosure

cc: Board of Directors

TYPE: INFORMATION

DOCUMENT NUMBER: 9202197

ORIGINATOR: 02

STATUS C

DIRECTORATE STATUS

FROM: HACKERMAN, NORMAN: COLLEGE OF NATURAL SCIENCES, UNIVERSITY OF TEXAS

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 07/24/92

SUBJECT: ENCLOSED REPORT, "SCIENCE EDUCATION, WHO NEEDS IT?"

DIRECTORATE

STAFF

ASSIGNED:

ASSIGNED:

ACTION
REQUIRED:

STAFF
ACTION:

SENDER'S DUE DATE:

OSTP DUE DATE:

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley
INTERNATIONAL/POLICY

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE:

EXT:

REMARKS:

OSTP RECEIVED: 08/04/92
FILE: P-EDUCATION

DEPT RECEIVED:

CENTRAL FILES:



COLLEGE OF NATURAL SCIENCE
THE UNIVERSITY OF TEXAS AT AUSTIN

Department of Chemistry and Biochemistry • Austin, Texas 78712-1167 • FAX (512) 471-8696

2197

July 24, 1992

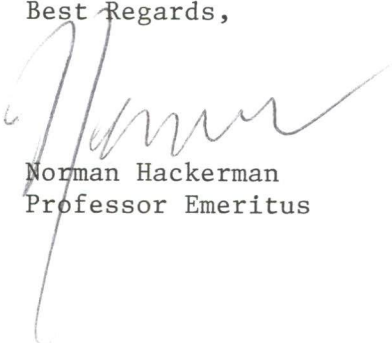
Dr. D. Allan Bromley
The Assistant to the President
for Science and Technology
The Executive Office Building
Washington, DC 20506

RECEIVED
52 AUG 4 10:39
OSTP
MAIL ROOM

Dear Allan,

This is a little off the topic since we last talked. But I have included a copy of a brief paper I have written as the result of a talk that I gave at the National Science Foundation work shop. This, I believe is a major problem of the science and engineering communities even though it might not seem so on the face of it.

Best Regards,


Norman Hackerman
Professor Emeritus

SCIENCE EDUCATION, WHO NEEDS IT?

NORMAN HACKERMAN

RICE UNIVERSITY AND UNIVERSITY OF TEXAS

This is a used title (1), but worthy of being repeated in order to provide again the simple answer - everyone. A more fully responsive answer might be - because science, and more particularly technology, are part of human culture (the state of advancement of civilization) and therefore important to all of us.

It is probably true, however, that none of us are interested in all parts of our culture, and this part is certainly no exception to this shortcoming. Nonetheless, almost all of us should be as aware as possible of science, which is simply our understanding of nature and its ways, for two additional reasons. The first is so as to be at ease with nature, a much more complex problem than this simple statement suggests. The second is to be at ease with the sometime bewildering pace of technological advance.

Both of these reasons imply the desirability of understanding research, development, science, technology and their interactions, plus their relationship to ultimate use. Another important aspect that deserves broad recognition and better integration into the societal mind is the effect of all of this on education. It is worth noting that the latter is an activity that occupies the full attention of perhaps a third of the country's population.

The scientific and engineering community has acquired great stature over the last half century, this is especially the case for the former, since engineers have enjoyed good standing since ancient times. Along with the increased stature have come certain stances, again especially of the scientific community.

The first such involves our belief that only the practitioners of research in the sciences understand the domain. We have the tendency to believe that the zeal we have for our work and the methods we use are not understandable to others. Therefore, we sometime adopt an attitude which says suitable support should be forthcoming because of the vital importance of the work. Related to this is the unsupported belief that science is a direct force on the economy. This is a belief held not only inside the community, but outside it as well.

The third position is less substantial, namely that there are two cultures (2) and ours is the important one. This is in part for the reasons given just above and in part because to many it seems dominant. A fourth belief is that new science provides a direct lead-in to human longevity and better health.

Except for the health item, these positions are untenable. Without going into much detail: (i) research may be our domain but the support to which we have become accustomed is in a much broader domain and to expect it not to be in competition with more timely concerns is unwise; (ii) many industry people, among others, believe that most industrial programs are evolutionary and very dependent on downstream activities such as financing, marketing, etc. Put otherwise, new science is the least timely factor of all of the interdependent steps required, i.e. from improved understanding of nature to better products or services. This statement is true except for the influence research has on maintaining a steady stream of educated individuals to people the whole system from scientist to accountant; (iii) there is only one culture as per the definition given earlier above, i.e. we are all in this together; (iv) this position may be correct, that is, there appears to be a more solid and direct link between new research findings and the potential for improved human well being. Even here, however, there is looseness of coupling between discovery and use. Obviously there is a book-worth in this paragraph - but not here.

As already noted the stature of research scientists and engineers has grown markedly in the public eye since the close of the war of the 1940's. Indeed members of our community have input to decisions at high levels of the government apparatus. Add to such heady diversive standing the current bases of evaluation of academic achievement and it is not surprising that there is degradation of post 12th grade education, especially at the 13th and 14th level. It should be recognized that this has had detrimental effects in elementary and secondary school performance as well. The latter stems from ever increasing

neglect by the science community of those students who might be fitted and interested in pre-college and community college teaching careers. This cohort has been lumped in with all others whose interests do not require major immersion in the sciences.

It is worth calling attention to an important statistic, namely that the whole scientific and engineering cohort numbers 5 million in this country. That is, we comprise of 2% of the U.S. population - not vanishingly small, but not overwhelming either. To carry this point further, the largest estimate available for the number of research scientists and engineers in the U.S. is one quarter of a million, or 0.1% of the population. Using the larger figure, just above, and arbitrarily multiplying it by 5 to include those who require more of a science background in their profession, e.g. workers in the health field, or patent attorneys, there are still 90% of those in college who do not require an in-depth science background for their livelihood. It is these people plus the some 60% of the population who do not have a college experience who provide most of the wherewithal to support the federal government research and development activities.

Deep concern has been voiced about the availability of interested and qualified individuals to succeed those of us currently in place in the research community, the pipeline problem. For a time this centered on the question of successors in faculty positions, particularly in research universities. This induced an almost hysterical response which had the effect of still further diminishing faculty interest in non-science majors. This may well be detrimental in terms of a potential weakening of our support base, an event which may already be underway. It is also consequential because this is the best source of K to 12 teachers with real appreciation of science, research, development, technology and teaching. (an opinion)

Two other items deserve mention here. There is among some a perception of inequity in that 0.1% of the population receive about 2.8% of the GNP in 1990 as support for their work, not including salaries and fringe benefits. Give that even only a quarter of R & D spending goes to research that still leaves

0.7% of the GNP for support of only 0.1% of the population, again excluding remuneration. The second item relates to valuing faculty activities. In about forty years in research universities, this has swung from being based on too high a teaching to research ratio to too high a research to teaching ratio, i.e. excessive t/R to too high R/t . The purpose of the support of faculty research should be to maintain originality, creativity, and enthusiasm in the faculty member with the view of inducing same in the students. The outcome of the research, that is new science, should be seen as a bonus.

Given that all of the above is valid, what is to be done? Insofar as grades K through 12 are concerned, the important task for university faculty is to help form good elementary and secondary school teachers. As has already been noted the science background of these teachers must be a matter for science faculty concern. Since current 13th and 14th level courses have not been successful in doing so, it follows that a different approach is necessary.

Presently such variations as are attempted remain based on a disciplinary approach. These fail for a number of reasons, such as insider language instead of customer language, greater depth and breadth of discipline than the non-professional wishes to acquire, the latter requires greater mathematics proficiency than many opt for, a perception that non-science majors are lazy or stupid or both - for most of it is a flagging of interest on a topic in which many were originally curious. There are probably other reasons also. The course also can be seen as approaching the additional problem of better understanding of science by the public at large since three to four million students per year would have the exposure.

The 13th level course should be for all students and be based on a better understanding of nature. High standards of intellectual quality must be maintained and laboratory and observational activities must be an integral part. It is understood that many general science courses have been tried with little or no success. In general they have been watered down disciplinary

courses or superficial courses with each discipline having a recognizable segment.

Beyond the freshman year for those who major in science or require it for their future professional life the proper thing, of course, is to begin to delve into the appropriate discipline, still maintaining high standards of quality. In this instance we should minimize unproductive barriers to those who are interested but we should not induce the uncertain into the field. The last point is important since research and problem solving are already frustrating enough at times even for those fully self-motivated to research as a career.

To return to the opening course, whether for non-majors alone or for all the basis should be nature and its components: forces, material, space and time. Being repetitious, it should use the language of the listener and not the code words of the insider. It should intertwine laboratory and other observations and it should use computers generously. It should keep uncertainty, anomaly, conundrum and change always in the forefront. This provides for risk, risk assessment, how such knowledge affects us, and the place of science and technology in societal affairs. It must include the particulate nature of matter, its interchangability with energy, the quantum quality of the latter, its relation to force, the origins of force and so on. From this it is also possible to provide a rational basis for the existence of the disciplines as well as the subdisciplines. In addition the relative scientific narrowness of most practitioners of science can be clarified.

Finally, the vital need by society for ever expanding technology and the dependence of same on science can be shown. In fact, the system of science to technology to use and the many types of required participants in that system, other than scientists and engineers, can be expanded upon.

This course cannot be used as a precursor to courses in the individual disciplines but there are two avenues available

to the non science major whose interest is piqued enough to want to go further. One is to take the standard course in one or more fields according to taste and time. The other is to have courses available on generic societal problems of high technology content. Examples include those dealing with environmental, transportation, energy, health, construction, and the like.

In sum, we can do better in interesting students in science without making scientists of them this requires leaving behind the belief that only those with deep interest in the field are intellectually capable of grasping its rudiments and of recognizing its importance to the human species.

1.) Norman Hackerman, Science 256, 157, (1992)

2.) C.P. Snow, "The Two Cultures and the Scientific Revolution"
New York American Library, N.Y. 1964

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1.) Norman Hackerman, Science 256, 157, (1992)

2.) C.P. Snow, "The Two Cultures and the Scientific Revolution"
New York American Library, N.Y. 1964

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"Document Control"

TYPE: ACTION DOCUMENT NUMBER: 9202272
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

FROM: DESMOND, Charles: UNIVERSITY OF MASSACHUSETTS

TO: DR. D.A. BROMLEY



DATE OF
CORRESPONDENCE: 07/24/92

SUBJECT: HE IS WRITING REGARDING A CONVERSATION HE HAD WITH
DR. BROMLEY REGARDING EFFORTS TO BRING MORE TALENTED
MINORITIES, WOMEN AND OTHER DISADVANTAGED STUDENTS
INTO MATHEMATIC AND SCIENTIFIC FIELDS.

DIRECTORATE STAFF
ASSIGNED: INTERNATIONAL/POLICY ASSIGNED: AB

ACTION STAFF
REQUIRED: FOR DAB'S SIGNATURE ACTION: FOR DAB's signature

SENDER'S DUE DATE:
OSTP DUE DATE: 08/21/92 STAFF DUE DATE 8/21/92
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:
REMARKS:



OSTP RECEIVED: 08/07/92 DEPT RECEIVED:
FILE: P-EDUCATION
CENTRAL FILES:

THE WHITE HOUSE
WASHINGTON

September 1, 1992

Dear Dr. Desmond:

Thank you for your letter of July 27 regarding the TRIO program in the Department of Education (ED) and its relation to Department of Energy (DOE) programs.

As part of the strategic plan to provide federal leadership in mathematics and science education, Federal agencies are directed to place special emphasis on increasing the participation and improving the performance of students from groups underrepresented in mathematics and science, including minorities, women, persons with disabilities, and the economically disadvantaged.

In response to this direction, there has been substantial contact over the past several years between program staff members in the two Federal departments, as well as in the field. Several of the DOE laboratories have had contacts with TRIO student groups. However, there are two basic problems in carrying out the expanded programs involving TRIO/ED and DOE collaboration suggested in your letter. One is the capacity of the laboratories. They are already at or near capacity in providing research and education appointments for precollege students in the summer.

The other problem concerns budget limitations in the context of conflicting priorities. Federal agencies are supporting actions other than the TRIO program addressed to the issues of underrepresented groups. These actions include minority teacher preparation and enhancement activities, development of mathematics and science curriculum materials sensitive to the diverse needs of students, and other comprehensive precollege programs. Teacher enhancement and preparation activities comprise a major priority toward which limited resources are directed.

Nevertheless, there are local challenges to addressing the problems of underrepresentation. The Department of Education has, in the past several years, added a special initiative to the Upward Bound program. Your university has been the recipient of a grant under this initiative, as I am sure you are aware. One of the critical parts of the of this initiative has been that each recipient of a grant shall establish cooperative relationships with other federally-funded programs for mathematics and science in its area. The critical point is that coordination is required at the local level with full support by the funding agencies. If your institution is experiencing particular success in this regard in the New England area, I would suggest that you share this success with other Upward Bound Mathematics and Science Regional Centers through the program staff in Washington.

Your efforts and the efforts of your university in this very critical area are widely recognized as providing significant leadership in programs for the disadvantaged in mathematics and science. I am deeply grateful for your contributions in addressing goals we share.

Sincerely yours,

A handwritten signature in black ink, appearing to read "D. Allan Bromley", with a stylized flourish at the end.

D. Allan Bromley
The Assistant to the President
for
Science and Technology

Dr. Charles F. Desmond
Vice Chancellor for Student Affairs
University of Massachusetts
Harbor Campus
Boston, Massachusetts 02125-3393



UNIVERSITY OF MASSACHUSETTS
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OFFICE OF THE VICE CHANCELLOR
STUDENT AFFAIRS
ADMINISTRATION BUILDING
HARBOR CAMPUS
BOSTON, MASSACHUSETTS 02125-3393

OSTP
MAIL ROOM

July 24, 1992

Dr. D. Allan Bromley
Science Advisor to the President
The White House
Washington, D. C. 20500

Dear Dr. Bromley,

I am writing to follow-up on the conversation I had with you following your dinner speech to the honorary degree recipients at the University of Massachusetts at Boston on Friday evening May 29, 1992. Your address, certainly one of the most refreshing I have had the pleasure to hear, truly captured my imagination and compelled me to speak to you directly.

I write today to again reiterate to you my sincere belief that our national goal to bring more talented minorities, women and other disadvantaged students into mathematic and scientific fields can be achieved, and I volunteer myself to you to help you do it. As Science Advisor to the President, you are in the position to push aside some of the bureaucratic barriers which frustrate meaningful collaborations that, if allowed to flourish, would advance the President's science related initiatives for minorities, women and other disadvantaged Americans.

Specifically, I would like to work with you on forging a real, enduring and permanent relationship between the so-called TRIO programs in the Department of Education and the science related programs in the Department of Energy. TRIO, the largest educational opportunity initiative in the United States, reaches all across America. Within the scope of programs funded by the TRIO Sub-part, Sub-part 4, Part A of Title IV of the Higher Education Act of 1965, virtually every racial and ethnic minority group in America is provided an avenue to higher educational opportunity. The Department of Energy, charged as it is with advancing the President's science agenda, including reaching out to women and minorities, has not yet effectively figured out how to interface with TRIO. This is a tragedy and needs to be corrected.

For more than two years, I have attempted to promote a meaningful dialogue between the Department of Energy, the Department of Education and leadership personnel from within the TRIO community. While I believe some interest in forging ties was demonstrated, neither Education nor Energy has taken a real leadership role in making substantive connections between these units. TRIO programs are the primary route through which most minority, disadvantaged and low income students find their way into higher education. Many of these students, simply because of their lack of financial resources, are denied the opportunity of participation in highly rigorous academic programs necessary for advancement in mathematics and the sciences. It is critical, therefore, that we immediately take bold steps to ensure that the academic resources

Dr. Bromley
July 27, 1992
Page 2

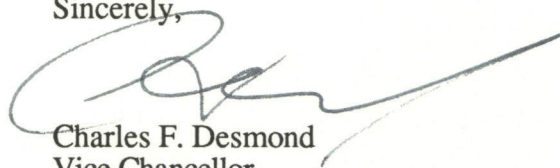
necessary for TRIO students to achieve at the limits of their potential are provided. Quite frankly, this will not happen unless and until someone recognizes the importance of TRIO programs to the President's goals and takes more dramatic steps to strengthen TRIO initiatives.

I believe, for openers, that the Department of Energy, with its National Laboratories and rich scientific resources, should develop concrete programmatic linkages with TRIO programs across the country. I cannot personally understand why this has not already happened. Nonetheless, it is clear to me that it certainly won't happen unless someone prioritizes this linkage as an objective. I would hope that you, sir, might give this matter your personal attention.

This letter is, indeed, a brief introduction to what I know is a complex issue; yet it is an issue with which I believe we all should be concerned. I sincerely hope that you will give this matter some thought and that you will consider undertaking steps to address how we might better advance the academic achievement of TRIO students with existing federal resources.

To close, I was profoundly delighted to have met you here at UMASS/Boston. Truly your achievements, both personal and in service to our country, exemplify you as a real role model for our graduates. I do hope that you will give some thought to my concerns and I would be more than happy to come to Washington to discuss them with you in greater detail.

Sincerely,



Charles F. Desmond
Vice Chancellor
Student Affairs

"Document Control"

TYPE: INFORMATION

DOCUMENT NUMBER: 9202262

ORIGINATOR: 02

STATUS C

DIRECTORATE STATUS

FROM: BELDOTTI, Jodi: ASSOCIATION FOR WOMEN IN MATHEMATICS

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 06/11/92

SUBJECT: PRESS RELEASE REGARDING THE 1992 ALICE T. SCHAFER
MATHEMATICS PRIZE AND BACKGROUND INFORMATION ABOUT
THE ASSOCIATION FOR WOMEN IN MATHEMATICS

DIRECTORATE

STAFF

ASSIGNED:

ASSIGNED:

ACTION
REQUIRED:

STAFF
ACTION:

SENDER'S DUE DATE:

OSTP DUE DATE:

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

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D. Allan Bromley

WHITE HOUSE TRACKING #:

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OSTP RECEIVED: 06/23/92

DEPT RECEIVED:

FILE: P-EDUCATION

CENTRAL FILES:

AWM
ASSOCIATION
FOR WOMEN IN
MATHEMATICS

Box 178 Wellesley College Wellesley, Massachusetts 02181 617-237-7517

Dr. D. Allan Bromley
Assistant to the President for Science and Technology
Room 358
Old Executive Office Building
Washington, DC 20506

June 11, 1992

Dear Dr. Bromley,

Enclosed is a Press Release regarding the 1992 Alice T. Schafer Mathematics Prize, awarded annually by the Association for Women In Mathematics (AWM) for excellence in undergraduate mathematics. Also enclosed, for your review, is a background information sheet on the AWM organization.

AWM feels it is extremely important to celebrate excellence in the field of mathematics wherever it is found, and that publicizing these achievements can also serve as a positive influence to young readers contemplating a possible future in mathematics who are looking for role models for encouragement.

If you would like any further information, please feel free to contact me.

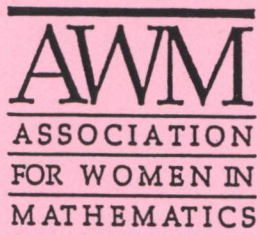
Sincerely,



Jodi L. Beldotti
Executive Director

Enclosures

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MAIL ROOM



The Association for Women in Mathematics (AWM) was established in 1971 to serve and encourage women to study and have active careers in the mathematical sciences. Equal opportunity and equal treatment of women in the mathematical sciences are promoted. There are over 4,000 members, including both men and women, from the United States and around the world, representing all parts of the mathematical community. As an organization promoting women in the mathematics arena, its efforts have led to greater participation of women in the mathematical community, especially as speakers at mathematical meetings and as members of committees of the mathematical societies.

AWM offers a variety of activities and opportunities for its members. At the national level, AWM sponsors speakers and panels at the Joint Mathematics Meetings sponsored by the American Mathematical Society and the Mathematics Association of America. Since 1990, AWM has had a continuing presence at the annual meeting of the Society for Industrial and Applied Mathematics.

Through cooperation with outside funding agencies, AWM is able to provide travel grants for women to attend research conferences, support high school mathematics day, sponsor a mathematics prize for undergraduate women, sponsor an award for excellence in mathematics education, produce and disseminate materials relating to careers in mathematics, produce a directory of women in the mathematical sciences and encourage a variety of activities aimed at promoting women and mathematics. AWM and WAM are coordinating efforts to provide a Speakers Bureau. Members receive the AWM Newsletter, published 6 times a year, containing informative articles, book reviews and job advertisements.

The headquarters office functions as a resource center providing information and career materials upon request. For more information contact:

Jodi L. Beldotti, Executive Director
Association for Women In Mathematics
Box 178 Wellesley College
Wellesley, MA 02181
(617) 237-7517
email: jbeldotti@lucy.wellesley.edu

Association for Women In Mathematics announces
the 1992 Alice T. Schafer Prize Winner

Zvezdelina E. Stankova of Bryn Mawr College has been named the recipient of the third annual Alice T. Schafer Mathematics Prize sponsored by the Association for Women In Mathematics (AWM). The Prize is given to an undergraduate woman in recognition of excellence in mathematics, and carries with it a stipend of \$1000. The criteria for selection include, but are not limited to, the quality of the nominees' performance, interest in mathematics, ability to do independent work, and performance in any mathematical competitions.

The prize committee has also named Julie B. Kerr of Washington State University as Runner-Up and selected nine other nominees for Honorable Mention. The awards will be made at the annual meeting of the Society for Industrial and Applied Mathematics (SIAM), which celebrates its 40th anniversary in Los Angeles in July.

The Prize was named to honor Alice T. Schafer, a former AWM President and a founding member of the organization, who has taken a special interest in supporting women at the start of their careers in mathematics. The 1992 prize committee consisted of Alice T. Schafer of Marymount University, Jill P. Mesirov of Thinking Machines Corporation, and Ann K. Stehney of the Center For Communications Research.

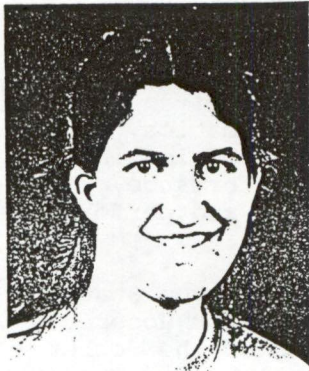
The committee noted that the field of 32 candidates seemed especially strong. In addition to their impressive achievements in course-work, in independent study, in competitions, and in undergraduate research programs, the nominees of 1992 devoted themselves to numerous projects on behalf of the mathematical life of undergraduates at their institutions. Each candidate is a talented young woman who can take pride in her accomplishments and the commendation of her professors.

ZVEZDELINA E. STANKOVA, a 1992 graduate of Bryn Mawr College, has earned wide recognition for her research and performance in mathematical competitions. She participated last summer in the Research Experiences



for Undergraduates (REU) at the University of Minnesota at Duluth, and her research there on classifying permutations with forbidden subsequences of length 4 was praised as impressive work on a difficult problem. Her paper on the subject was well received at the joint mathematics meetings of the American Mathematical Society and the Mathematics Association of America in Baltimore in January. In addition to her research in combinatorics, she has done advanced work in a number of areas. In nominating Stankova, Professor Rhonda Hughes of Bryn Mawr wrote, "Her results are strikingly original and one is always reminded that her work is that of an extraordinary mathematician". A two time silver medalist on the International Mathematics Olympiad team from her native

Bulgaria, known as both an excellent problem-solver and a first-rate expositor, Stankova was the Runner-Up for the Schafer Prize in 1991. She will return to the REU Program in Duluth this summer before beginning graduate work in mathematics at Harvard University in the fall.



JULIE B. KERR, this year's Runner-Up, will graduate in December from Washington State University. She received Special Recognition from the 1990 Shafer Prize committee for her early achievements, including distinction in graduate courses as a first-year student. In each of the last two years, she finished in the top sixty students on the nationwide Putnam Examination for undergraduates. Following a Budapest Semester in Mathematics as a sophomore, Kerr participated in the 1991 NSF-sponsored Mills Summer Mathematics Institute, and she will work this summer in computational number theory at the REU at Rose-Hulman Institute of Technology. An aspiring teacher, Kerr also finds time to tutor in mathematics.

The AWM is pleased to award Honorable Mention in the competition to the following outstanding candidates.

MARCIA JOYCE GEIGER ISAKSON graduated this year with a rare double major in applied mathematics and physics at the U.S. Military Academy. Among her honors in the Department of Mathematical Sciences, she won the Top Cadet award in the Research Seminar in Applied Mathematical Projects for work done in the semester at Brookhaven National Laboratory. She was a member of the USMA team that earned Honorable Mention in the 1992 Mathematical Contest in Modeling, sponsored by COMAP. Recipient of a Hertz Fellowship, Geiger will be a graduate student at the University of Texas at Austin in the fall.

CHERYL P. GROOD graduated from the University of Michigan this year, having been a central figure in the Undergraduate Math Club and MAA Student Chapter there. A 1990 participant in the REU at Rose-Hulman Institute, Grood won an Honorable Mention in the 1991 Shafer Prize competition as a junior. She spent last summer at the Mills Summer Mathematics Institute, where she will return by invitation as a student assistant this summer before entering graduate school at the University of Wisconsin in Madison.

KRISTINE HAUSER, a 1992 graduate of Grinnell College, was cited for her maturity in both courses and independent work. She spent two summers doing joint research on the word problem in cycle-free groups with faculty member Royce Wolf, and she presented their results at this year's Conference on Undergraduate Mathematics at the Rose-Hulman Institute of Technology. Hauser will be a graduate student at the University of Chicago this fall.

LAURA HEGERLE, who graduated this year from Colorado College, was chosen to participate in the undergraduate research program at Harvey Mudd College after her sophomore year. Since then, she has maintained an interest in graph theory, speaking on her work at a regional MAA meeting and a university seminar in the field. Hegerle plans to go to graduate school after teaching mathematics in the Peace Corps.

EUGENIE HUNSICKER graduated this year from Haverford College, having spent her junior year immersed in a "broad array" of mathematical subjects at Oxford University. She devoted two summers to doing research in algebraic combinatorics with faculty member Curtis Greene, and she presented their results at a recent MAA session of student papers. Hunsicker will enter graduate school in mathematics at the University of Chicago this fall.

MARY C. JOYCE, a 1992 graduate of University of Massachusetts at Amherst, wrote a senior honors thesis on statistical estimation with censored data. She spent her junior year at the University of Freiburg, and this year she was a member of a UMass team that won Honorable Mention in the Mathematical Contest in Modeling. In the fall, Joyce will enter the University of Illinois at Urbana-Champaign for graduate work in applied mathematics.

MARTHA J. MANCEWICZ, who graduated from Kalamazoo College this year, spent part of her junior year with the Budapest Semester in Mathematics program and part of her senior year in the Mathematics Department of the General Motors Research Laboratory. Her work at GM on developable surfaces was presented to mathematicians, engineers, and visiting high school students at GM and also to a meeting of MAA Student Chapters. Mancewitz will attend the University of North Carolina next year as a graduate student in biostatistics.

JENNIFER WILLIAMS is currently writing a senior honors thesis and expects to graduate this summer from Oklahoma State University. A veteran Putnam Exam entrant, Williams provided the impetus for a Problem Solving Seminar in her department. She was a member of OSU's 1992 Mathematical Contest in Modeling team, whose solution to the "Emergency Power Restoration System Problem" was judged Outstanding (one of only five such awards in the contest as a whole.) The team also won the SIAM prize for that problem, and their faculty advisor cites Williams' creative leadership as a significant factor in their success.

VIRGINIA E. WRIGHT completed a joint B.S./M.S. program this year at Emory University. She spent two summers in REU programs, working in number theory and cryptography at Florida State (1990) and in graph theory at the University of Minnesota at Duluth (1991). She has continued her research on n -tuple vertex graphs in the past year and spoken on her results at a number of conferences. Wright has been awarded a Marshall Scholarship to study mathematics at Trinity College, Cambridge.

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"Document Control"

TYPE: ACTION DOCUMENT NUMBER: 9201778
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

FROM: DUNN, Christopher P.: DANVILLE ENGINEERS CLUB

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 05/06/92

SUBJECT: HE IS WRITING REGARDING A TECHNICAL EDUCATION
PROJECT IN THE LOCAL SCHOOL SYSTEM THAT WARRANTS
SUPPORT. HE ASKS FOR DR. BROMLEY'S ASSISTANCE IN
SECURING THIS PROGRAM.

DIRECTORATE STAFF
ASSIGNED: INTERNATIONAL/POLICY ASSIGNED: *AB*

ACTION STAFF
REQUIRED: FOR DAB'S SIGNATURE ACTION: *For DAB's signature*

SENDER'S DUE DATE:
OSTP DUE DATE: 06/01/92 STAFF DUE DATE *6/1/92*
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley
INDUSTRIAL

WHITE HOUSE TRACKING #: CONTACT PERSON:
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OSTP RECEIVED: 05/18/92
FILE: P-EDUCATION

DEPT RECEIVED:

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**A PROPOSAL FOR ENDOWED POSITIONS FOR
SECONDARY TECHNOLOGY, MATH AND SCIENCE TEACHERS**

Arlan Andrews, Sr.

ASME Fellow, OSTP

April 28, 1992

Executive Summary

Background

New and innovative methods of secondary school instruction in technology, science and math are available to improve the education and training of students, both those bound for college and those bound for other training and trades.

Problem

Many of the teachers who employ these new and innovative methods are young and do not have enough seniority to survive state budget cuts. Additionally, laboratory equipment is costly to obtain and maintain.

Proposal

To stimulate and encourage the formation of secondary school endowments—"endowed chairs"—analogous to those of universities, that will support the salaries and laboratories of secondary school technology, science and math instructors and shield them from the vagaries and politics of state legislature appropriations.

Background: High School Technology Lab

On January 24, 1992, in the company of representatives of Danville Metal Stamping Company, I was given a tour of the Technology Laboratory at Danville High School, Danville, Illinois. The school has a comprehensive and advanced introductory technology and science course for high school freshmen. The well-equipped classroom features circular "kiosks" divided into separate sectors, each sector serving two students who must work together as a team.

The learning sectors each have a VHS tape player, a computer and other equipment related to the learning module being studied. The two-person teams are chosen based on interest alone, giving the students experience in working with persons they may not know or like. Lab equipment is distributed from a storeroom run by the student "Lab Manager," a position that each student must occupy during the school year. The manager not only signs out and distributes equipment to each learning sector, but is also responsible for maintaining records, resupplying expendable materials and otherwise assisting the experimenters.

Learning modules, many acquired from the firm of Synergistics, Inc., take one week to complete, and include subjects such as electronics, electricity, transportation, rockets, computers, desktop publishing, technical writing, mechanical systems, and others. This brief exposure to a wide range of hands-on experiences allows students to sample the "feel" of science and technology. Students plan their work and experiments as scheduled projects, and grade each other's progress. The instructor, interviewing each student during the year, has a track record of student interests and accomplishments to use in counseling the student as to which path to choose after the freshman year. For example, DHS has several vocational tracks that students may choose, including carpentry, auto mechanics and printing and advertising. A student particularly interested in lab work may choose traditional biology, chemistry and physics, while a student technical writer may wish to add more studies in composition and English.

The enlightened instruction rules also allow students to accumulate extra credits for extra work, and to convert these points into a "Tech Ticket." If the situation arises in which a student simply cannot work with the chosen team mate, loathes the subject matter or otherwise has problems with an upcoming work module, he or she may "cash" the "Tech Ticket" and opt out of that week's work, choosing instead to spend the period working with learning programs available on a bank of PCs in the lab.

High Tech in High School

For sophomores and above, Danville High School also offers CAE/CAD classes in which students work first at a drafting board to gain experience with traditional methods, advancing within a semester to CAD on PCs. An adult technician works with them to transfer their CAD data to a numerically controlled milling machine, and the student sees his or her designs translated into actual parts right in the same classroom. In succeeding grade levels, well-equipped electronics labs and traditional science and math courses offer

students pre-college and vocational training.

Dr. Carl Esslinger, Vice Principal of Danville High School, estimated that their freshman learning laboratory cost about \$200,000 to equip. Likewise, it was expensive to outfit their CAD/CAM classroom, the electronics labs, the printing center and shop, the carpentry shop, and the auto mechanics garage. All the instructors in these classes are young and enthusiastic and DHS has been providing excellent graduates, both college-bound and trades-bound, for their community and state.

The Problem

Unfortunately, because of drastic cutbacks in Illinois' school funding, the technology instructor, Mr. Robert Sexton, faces a layoff at the end of the school year. The local teachers' union voted for a pay raise, rather than for a freeze that would have retained more teachers. As a result, Danville stands to lose its most energetic teachers. Without enthusiasm and energy there is no way that the technology lab can continue to influence students in the direction of technology, science and math. Traditional classroom instruction—and instructors—simply cannot accommodate the flexibility and individuality found in Mr. Sexton's lab.

Similarly, such teaching labs must be updated continuously, especially in their electronics and computers, to hold student interest and provide realistic experiences.

A Solution

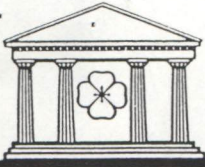
During the tour, I wondered why there was not some kind of endowment program, similar to those pervasive at the university level, that would create "endowed chairs" for targeted teachers such as Bob Sexton, protecting them from budgetary cuts. Such a program should be instituted nationwide to retain good instructors in critical subjects, teachers who would otherwise be lost. This is specifically a challenge for Danville at the moment, but since there are only 22 such programs in the entire nation, doubtless the same situation is occurring elsewhere. Like their university counterparts, secondary teachers need a form of independent funding to ensure their salaries will be paid and their labs maintained and improved, regardless of the vagaries of politics and economics.

I have mentioned this concept to several teachers in different states and the response has been favorable. In addition, since I made the original proposal to my Fellowship-sponsoring organization, the American Society of Mechanical Engineers (ASME), several members in the Board of Governors have expressed interest. Dr. Alphonse Buccino, OSTP, also supports the endowment idea, suggesting additionally that the concept be extended to include foundations that buffer secondary schools from year-to-year appropriations by state legislatures, as university foundations operate.

Proposal

I propose that OSTP encourage appropriate institutional, educational, industrial, professional and policy resources to design and implement a national program that provides for national, state and/or local endowments for secondary school science, math and technology instructors. By Dr. Buccino's suggestion, these programs would probably best be administered by creating foundations to collect and distribute monies and to identify the intended teachers. Technical, scientific, trade, and industry organizations such as AAAS, ASME, IEEE, NCMS, NAM, etc., would be natural sources from which to solicit funds, grants, and materiel for the foundations and endowments. They should also be partners in establishing the institutions.

The concept discussed here would seem to be a natural extension of, or an inclusion within, the various educational initiatives and programs that the Administration is presently advocating. Dr. Buccino has agreed to co-author a white paper with me, to cover the subject in more detail, including comparison with similar programs, if any, and with comments solicited from educational professionals.



The
ASME
Foundation

345 East 47th Street New York, NY 10017

212-705-7158

May 4, 1992

Ms. Pam Roznoy
ASME Washington Center
1828 L Street, N.W.
Suite 906
Washington, DC 20036-5104

Dear Pam:

I shall share Arlan Andrews' proposal for endowed positions for secondary technology, math and science teachers with my Board of Trustees for their evaluation.

In the meantime, what action is being taken by the Danville School Administration to maintain its apparently successful Technology Laboratory program? Are they walking away from \$500,000 or more capital commitment or is it just the loss of Robert Sexton? Will a more senior teacher fill his role?

How much is needed to provide Robert Sexton an "endowed chair" in Danville, Illinois?

What is Mr. Andrews thinking of in terms of a dollar goal for a national "endowed chairs" program?

My personal opinion is that major funding from a foundation could be secured for this purpose.

Sincerely,

Frank J. Simon
Executive Vice President

FJS:ls

May 12, 1992

**Mr. Frank J. Simon
Executive Vice President
The ASME Foundation
345 East 47th Street
New York, NY 10017**

Dear Mr. Simon:

Pam Roznoy forwarded your letter of comment about my proposal for "endowed chairs" for secondary teachers of technology, science and mathematics. I passed the request to my friend, Christopher P. Dunn, President of the Danville Engineers' Club, Danville, Illinois, to handle the situation at the local level. Today I spoke by phone with Chris Dunn and with the Danville High School Principal, Dr. Ellen Russell. This is their verbal update, to be followed by a letter.

Robert Sexton, the technology teacher who is the focus of my immediate concern, is recognized as a valuable resource by the community. After the announcement of his impending dismissal at the end of this school year, expressions of concern were voiced by community, educational, and local industry leaders. After a "battle," Dr. Russell says, the local school board agreed to re-hire Mr. Sexton and 23 other young teachers for one more year, but with no guarantees beyond that. At best, the situation has been postponed one year but this does not instill confidence in Mr. Sexton or the others. (The actual hiring is scheduled for their board meeting on May 13, 1992.)

Before this decision was made, Dr. Russell's options were either to shut down the program or replace Mr. Sexton with a senior industrial arts teacher who "builds birdhouses." She readily volunteers that older teachers without the recent training of Mr. Sexton and his peers cannot handle such a program. Libertyville, Illinois, a similar situation caused the technology program to be shut down completely. Dr. Russell is now in the process of checking with local school administration officials to solicit their probable responses to an endowed fund process. She wholeheartedly supports the new concept and hopes to see it become a national institution.

Mr. Sexton's annual loaded salary (basic salary plus benefits) will be around \$29,000.00 next year. I would propose that an endowed chair for the technology instructor at Danville High School be funded on the order of \$35,000.00 per year, with a specified yearly percentage increase, and that the money be divided between loaded salary and the purchase and maintenance of lab equipment and replenishment of lab consumables. The program at DHS would then begin with school year 1993 - 94, giving ASME and other supporters

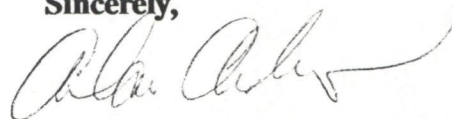
time enough to set up the financial, legal and/or contractual basis of the endowment, and to publicize the program nationally.

What I would like to have occur is a successful implementation of the endowed chair program at Danville High School, and in turn use it as a template or model for state and national programs.

Dr. Russell confirmed that there are approximately 22 other such technology programs around the country. I am certain that the U. S. Department of Education and other resources could supply details on these and other programs. Depending on the funds available and the perceived national need, I would propose that, as a start, approximately two teaching positions per state be identified (or instituted, if local programs don't already exist), for an estimated yearly amount of \$3.57 million, not including administrative costs.

Thank you for your interest and support. Please contact me directly if there is anything else I can do to help this program get started.

Sincerely,



Arlan Andrews, Sr. P.E.

Copy to:

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DANVILLE ENGINEERS CLUB

P.O. BOX 194

DANVILLE, ILLINOIS 61834-0194



92 MAY 18

OSTP
MAIL ROOM

May 6, 1992

Dr. D. Allen Bromley
Science & Education Advisor to the President
THE WHITE HOUSE
Washington, D.C. 20500

Dear Dr. Bromley:

America needs to become more competitive. We are losing manufacturing jobs, and many graduating students who apply for manufacturing jobs lack the basic skills that qualify them for an entry position.

This letter, however, is not a reminder of a situation that you are well aware of and have to deal with every day. It is to bring to your attention a situation that we believe merits your consideration. We also believe it merits some action by your office.

The Danville Engineers Club was given a presentation in December 1991 by Mr. Bob Sexton of Danville High School. Danville High School is fortunate to be one of 22 high schools in the nation to have a modular synergistic learning technical center. In these tech centers, the students follow a curriculum of learning with hands-on experience under the guidance of a specially trained technical educator. (Please see the enclosed material describing a similar tech-center.) Touring the facility one catches the enthusiasm of the students as they work with the various learning modules.

It is the consensus of our club that this facility fulfills a necessary requirement in preparing our children for the technical challenges that face America in the future. (It made me feel comfortable that my own children would eventually be taking advantage of this facility.) We believe that it is of tremendous strategic importance to the country that each generation be educated and skilled in the areas of science, engineering and manufacturing.

However, as engineers, we also know that sophisticated systems require highly trained and talented people to make them work.

When I received a call from Mr. Bob Sexton informing me that he had received notice that he was being laid off, I was flabbergasted! The school system needed to cut its budget and, as Mr. Sexton was relatively new to the school, he had to go. His only hope was if the teachers' union voted for a pay-freeze. It did not.

What will be the impact of Mr. Sexton leaving the school? His replacement will not have the specialized training that he has. The students will suffer by the break in continuity and, equally important (perhaps more so), this bright, intelligent teacher- who doesn't make much money anyway- may be lost to education forever. Moreover, the message that this incident will send to other bright, intelligent young people who might consider a teaching profession, will undoubtedly be one of discouragement.

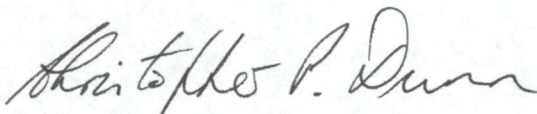
After our concerns, and those of various local industry leaders, were voiced to the school board, Mr. Sexton was told that his job was secure for another year. However, after the stress and insecurity that he had undergone, he is unsure about his future and may still be lost to the community.

Our consensus is that technical teachers who have demonstrated excellence and who have received specialized training should have immunity from the vagaries of budgetary constraints in our school systems. They are an essential ingredient for successful management of the technical challenges that we will be faced with in the future. If our government is serious about meeting these challenges, I hope it will take this situation into consideration.

Anything that you can do will be greatly appreciated.

On behalf of the Board of Directors of the Danville Engineers Club.

Yours sincerely,



Christopher P. Dunn
Past President Director

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DANVILLE ENGINEERS CLUB

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DIRECTOR

Danville Engineers' Club

Technology Education "The New Basic"

**As presented by: DHS Orientation in Technology Instructor, Mr. Bob Sexton
December 19, 1991**

The Skills Employers Want

- 1. Knowing How to Learn**
- 2. Competence: Reading, Writing and Computation**
- 3. Communication: Listening and Oral Communication**
- 4. Adaptability: Creative Thinking and Problem Solving**
- 5. Group Effectiveness:
Interpersonal Skills and Teamwork**

The Technology Preparation Curriculum Project.
Monroe County Community School Corporation,
Bloomington, Indiana

Technology 2000

A Profile of Technology Education at Dranesville Elementary

Gioia Caiola Forman & Cindy Etchison



Where will today's students be at the turn of the century? What will their lifestyle be; what technology will be at their finger tips? How will they be prepared for society's problems? What issues will affect their quality of life? Elementary schools are having to address these and other questions in preparing their students for the technological world after the year 2000.

Understanding what technology education is, its ramifications for school and society, and properly delivering its instructional content and opportunities to students has been the major thrust undertaken by the administration and staff at Dranesville Elementary School.

Dranesville, named after the 1820's registered town of Dranesville, is located in Fairfax County, Virginia on the outskirts of Washington, D.C. This facility opened in 1988 with thirty faculty plus support personnel. They immediately started to implement technology into the existing structure and curriculum. Today, the eight hundred sixty students are involved in numerous technology activities that are a common part of their daily instruction.

School Culture

The school's mission statement and yearly objectives include an emphasis on technology, stating the goal to strengthen the mathematics, science and technology

programs at all grade levels. This is carried out by integrating technology into all curricula areas. Technology education is, therefore, not a separate curriculum area, but a vehicle for applying the concepts acquired in math, science, social studies, and language arts. The application of technology is used to solve current problems and needs. Technology teaching at Dranesville includes more than just teaching with technology such as computers. It involves teaching about technology in a problem solving methodology that includes action oriented situations using the students "know-how" and "ability to do" capabilities in a carefully planned interdisciplinary learning situation.

Staff

The atmosphere of the school includes a committed, caring, staff dedicated to the student's positive growth. Classes are grouped heterogeneously by grade level. The classes are self-contained and supported by strong team planning. Planning for technology activities is completed through the work of school leaders including guidance personnel, technology education resource individuals, computer support assistance, reading specialists, a business/industry liaison, learning styles expertise and more. Instructional thrusts include integrating the language arts with other curriculum areas, while providing for different learning styles with right and left brain activities.

Every teacher has taken at least one graduate level course in the 4-mat system that explores the current research on learning styles and right/left brain processing. The staff is empowered to make decisions, through teacher chair committees involved in shared decision making and peer coaching.

Design and Layout

Dranesville's school plant design includes four pod areas with wet and dry facilities surrounded by self-contained classrooms for both large and small group instruction and activities. Unique features include a language arts classroom attached to an open, spacious, and totally automated library; two theatres; a multi-purpose room with stage; a gym; and many small resource

Photo 1 Students involved in problem-solving activities for Techno Expo



and conference rooms. The inviting facility has a strong and growing school culture that is easily identified when you walk through the front door.

Students have access to a computerized library system, which contains a CD-ROM encyclopedia. Frequent and appropriate classroom computer use is a common denominator in all instructional situations. The student's communications experiences are further enhanced through the use of three telecommunication networks that include National Geographic's Hello Network, Iris, and the county's bulletin board. These systems provide students with access to projects and data that support the curriculum. Participation in data collection and analysis projects promotes the school culture by encouraging collaborative learning, brainstorming, and problem solving. The library's automated catalog system and electronic encyclopedias provide students easy access to publications and reference materials.

Due to the changing nature of information technology and the wide range of products available, teacher workshop and inservice training opportunities are provided by the county office and in-house education technology specialists. One hundred percent of the teachers have telecommunicated and work constantly to keep up with the latest program opportunities.

Computers are used as tools to strengthen all areas of the curriculum. Word processing, desktop publishing, and utility software provide the means for students to become proficient in the four-step writing process. Students brainstorm a topic to write about, enter a draft document into the computer, and later edit and print a final copy. Problem-solving and simulation software provide opportunities in math, science, technology, and social studies for students to transfer concepts to new situations. Students work individually or in cooperative groups to achieve their objectives.

The student's communication experiences do not stop with this technology. All forms of communication are practiced, whether it be through language arts, art, theatre or other activities. It is important to note that the use of technology enhances learning about basic communication systems and how they are utilized in our society.

Other forms of communication that will be addressed in the near future include the use of NASA's cable television network and educational station. The school is in the process of building a studio production room to further enhance communication technology through video activities. Activities are underway to have students express themselves through written scripts, then create the video to complete the communication process.

Plans are now underway to use Autodesk software including Auto Sketch, Animator, and CAD programs. These materials will be used in a permanent technology display area that will be available for "hands-on" use by the students. The displays will include materials depicting timelines, technological spinoffs, and learning situations that involve students in the educational process.

Selected areas of the school, such as the pod areas, have "tinker tables" that allow students to design, create and manipulate materials in a building process. These areas will be available for students to work in structured or individual activities on such topics as energy, the environment, or other instructional themes.

Implementation Stages

Implementing technology education activities into an elementary school involves considerable inservice, whether completed in a formal or informal procedure. Dranesville teachers with the assistance of resource personnel, got involved in the implementation process in an informal manner. This process involves an awareness stage, research and resource development, extensive planning, a piloting process, and evaluation. The following brief explanations describe these steps in the process.

Awareness

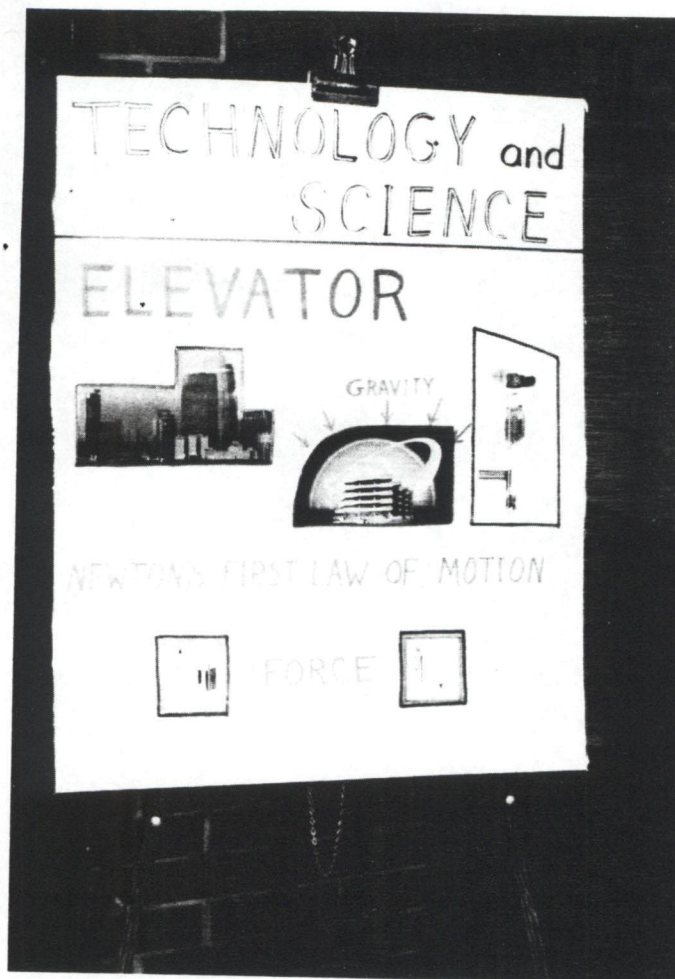
Implementing technology education does not have to be a complicated process. It does involve the building of a philosophy or state of mind as to what technology is (more than just computers), what technology education is, the relationship of technology education to other disciplines, and what learning gains will occur as a result of implementation. So often, this step is not internalized in the implementation process, which may cause problems later when evaluation takes place.

The implementation process at Dranesville incorporates a philosophy that every teacher in the school is a technology teacher. Technology activities are not limited to a single room; activities take place in every classroom, based upon the needs of the teachers and the students at the time. This philosophy has been expanded to have learning take place in the hallways, playground, open house or any other situation that is appropriate for learning.

After a period of time, all teachers incorporated technology into their teaching

Photo 2 Sink and Float problem-solving





◀ Photo 3
Information
poster
displayed
by the
school's
elevator
(original
material
developed
by Kenneth
Smith,
Charles
County
Public
Schools)

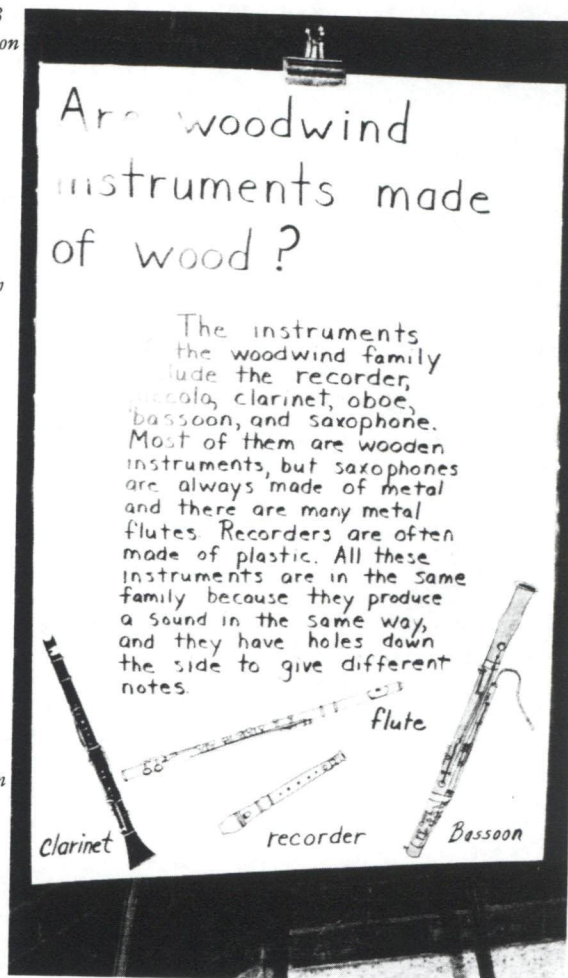


Photo 4 ▶
Information
poster on
music &
technology
displayed
outside
music
room

methods. For example, elementary teachers tend to rely heavily on traditional methods such as drawing paper and the chalkboard. Although students are problem-solving, it is in a way that never allows the idea to come off of the page and into the life of the student. Thus, a three dimensional form is seldom tested for its worth or developmental characteristics.

These elementary technology teachers are using a problem-solving approach in subject areas such as language arts, social studies, etc. The teachers soon realize that technology has its own content base related to such topics as environment, communications, transportation, etc. The combination brings the experience to life. This approach helps the students' learning ability to become more beneficial. Learning comes to life through involvement, as the activity progresses.

However, this process requires time and frequent interaction among teachers, while designing the learning situations. For maximum student growth, understanding learning styles, content objectives and purposes is required. Also, the organization and management of

materials, tools and equipment for student use is important. One example of how a teacher became involved in technology activities was related to the novel, *The Secret of NIMH*, by Robert C. O'Brien. After reading the book, the students brainstormed the environmental needs of rodents. They worked in teams to design houses for the creatures, thus, simulating a career in architecture. Using AIA materials on "mouse houses" as a resource, the students used their math skills to design the homes. Skills of measuring, creating rooms to scale, circumference and diameter were all incorporated. Classroom discussions included the impact on the environment—what materials they would need; what could be recycled; what needed to be destroyed all were considered. Upon completion of the construction, one group of students working in pairs, wrote scripts to sell their mouse homes. Another group video recorded the advertisement. The teacher led a discussion on persuasion during the filming. A wide range of skills and activities were incorporated into this literature study.

Research and Resource Development

Any implementation process involves extensive research and resource development to find what exists, who has experience that can be utilized and what works! The research process at Dranesville started as the technology education resource person accumulated materials related to the use of computers and software. These materials were immediately shared with the instructional staff.

The search was soon expanded to technology beyond the computer. For example, using computer networks in the school required an understanding of telecommunications processes by both the teachers and students. Therefore, information about this process was researched and shared.

This research caused Dranesville personnel to interact with fellow educators from around the world. To date, individuals from England, Australia, The Netherlands, Japan, Germany, and France have interacted, and visited the school to share information. Curriculum

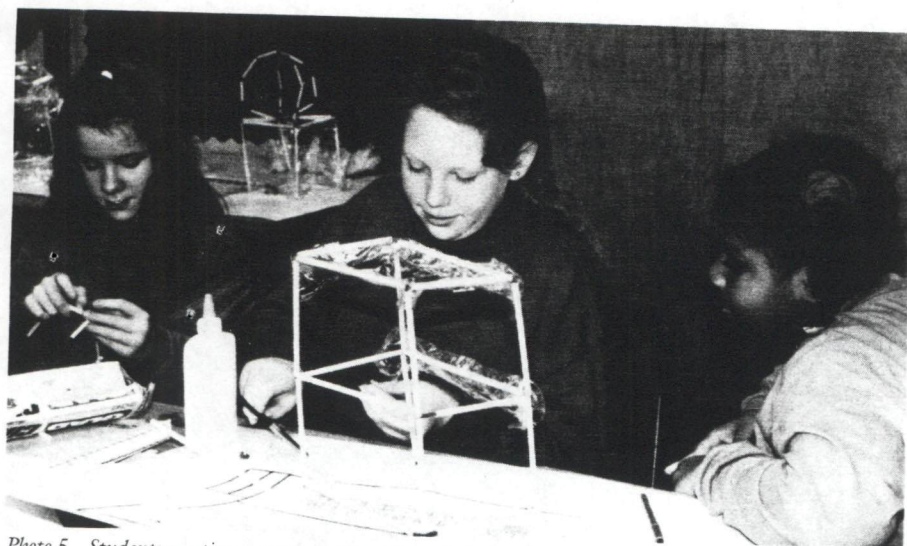
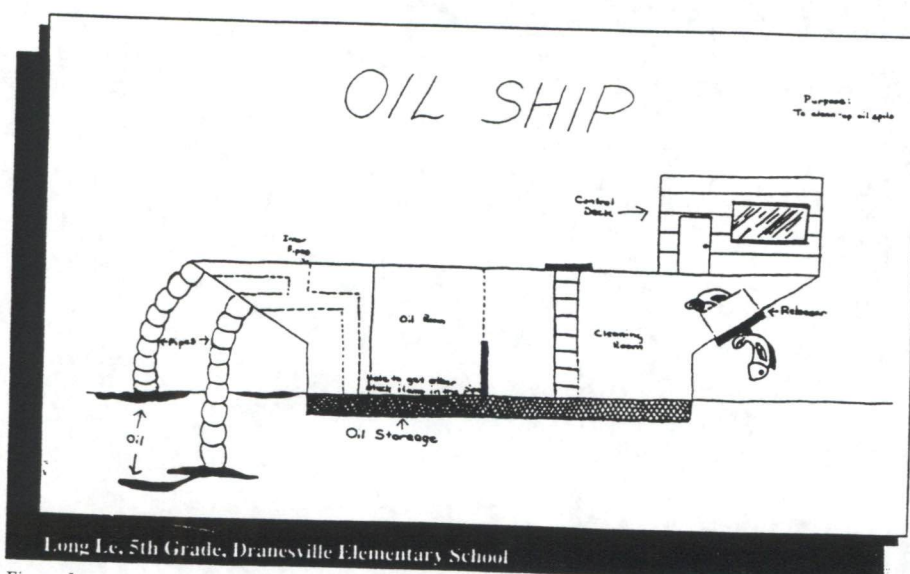


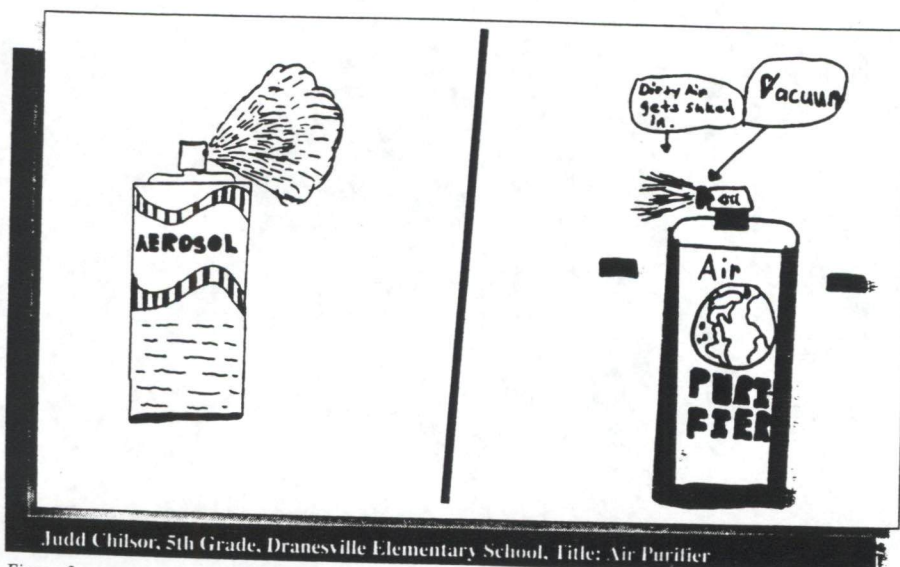
Photo 5 Students creating a straw structure from their drawings

Inventions to Save the Environment Series



Long Le, 5th Grade, Dranesville Elementary School

Figure 1



Judd Chilsor, 5th Grade, Dranesville Elementary School, Title: Air Purifier

Figure 2

materials from England and other countries have been analyzed for activities, levels of achievement, and methods to increase learning.

Various agencies have been utilized for their guidance. For example, materials originally developed by the American Institute of Architects (AIA) and the National Aeronautics and Space Association (NASA) have been of value. Considerable expertise has been shared by the International Technology Education Association through their resource network. In addition, personnel from the following institutions have interacted with the school staff: University of Maryland, Virginia Tech, University of Wisconsin-Stout, James Madison, South Australian Technology School of the Future, and the Center for Design and Technology Education in Dudley, England.

As professionals from the various schools, agencies and associations visit Dranesville, the information gathering and sharing process continues. Dranesville's visitors have included professionals from the American Institute of Architects, National Aeronautics and Space Association and the National Science Foundation. Educators from Virginia, Delaware, Maryland, New Jersey, Texas, Pennsylvania, and Wisconsin have shared information. Many of these individuals have continued to stay in contact using the school's telecommunications network.

Numerous companies have been a part of the research process. To date, Autodesk, UNILAB, Delmar Publishing, Corporate Press and E & L Instruments have been involved with activities at the school. Materials and equipment are continuously being used in pilot situations to determine the grade, concept, and technology level for the items used. Often, it is found that a manufacturer originally designs a product for one level that can easily be utilized at lower grade levels with modifications in the teacher's instructional strategy. This school/company relationship has proven beneficial for all involved, but especially for the students who are experiencing technology in its many forms.

Literature searches have resulted in countless ideas that are then utilized as the planning process unfolds.

Planning

The instructional planning process at Dranesville is undertaken by leadership teams based on the outstanding expertise of the teachers. The overall direction of the curriculum is guided by county materials

Continued on page 25

Continued from page 16

that are constantly reviewed and updated. Each grade level at Dranesville is a planning team supported and joined by resource individuals that include reading, guidance and technology personnel. Other areas of expertise are added as needed. Here, the research and resource development are shared as the teachers add their experience to create teaching/learning situations designed to make a difference. The common language of all of the teachers is their background in learning styles. The assistant principal of the school serves as the resident expert in this area and frequently is involved in strategy sessions with the teachers.

The planning stage is the time when the technology teacher mentality unfolds into activities. These activities are built around technology experiences and grade level content. This is where the research and information gathering pays off. It is the time when activities are created to challenge students of all ability levels, while also making learning active, creative and fun. This stage is one of the most important phases of implementing technology education into the elementary school.

Piloting

The planning stage is closely followed by the implementation of the technology activity. Depending upon the desired outcome, this stage may evolve during the entire grading period or in a shorter period of time. Because planning is completed in a team process with resource assistance, the occurrence of the actual activity may be experienced by all of the students at once, or by smaller groups. This depends upon the implementation and strategies.

Evaluation

Regardless of the activity that is used, each experience is evaluated in terms of its efficiency through a debriefing process conducted by the teams. Many activities might be repeated from one year to the next, but seldom are they conducted in the same manner. Knowledge learned causes modifications that are combined with the teacher's expertise on the topic.

These steps in the implementing of technology education at Dranesville are completed each time an activity is developed. However, this is not the only place where technology education is implemented. As noted previously, every aspect of the school grounds are used as

instructional situations. Learning activities may be in the main halls where tinker tables are located, and in the main foyer where problem solving tables and posters are used to generate thought. Every opportunity is taken to create a learning environment.

Technology Activities

Teachers have learned to use design briefs at each grade level when incorporating technology activities into the curriculum. Design briefs have been used in a first grade unit on Fairy Tales. Students might have a technology activity of helping Little Red Riding Hood safely get her cookies to Grandmother's house. These students may decide to design and construct a "wolf proof" container or a model of a safe walking path.

Third grade students, studying a science unit on "Sink and Float" from the Elementary Science Study (ESS), have designed and constructed a container that will float, holding as many marbles as possible. If clay is one of the materials available, students actively explore the properties of clay and discover ways to cut and shape the clay.

Fifth grade students apply geometry concepts by studying shape and form in architecture and by constructing monuments with straws and other materials. Art and architecture has been a theme utilized throughout the school, to enhance students awareness of the world around them.

In physical education classes, students have participated in comparisons of their body needs and those of astronauts. Visuals include NASA posters and related materials used in the gym. Computer programs are utilized to collect data and compare heart rates, studying technology as it relates to health and physical fitness. The children are also involved in technology activities during music class. Composing on the computers, making their own instruments and problem solving how to simulate sounds are all technology activities.

The students' math, science, and technology skills are shared with their parents and the public at the annual at Dranesville Technology Exposition, better known as Techno Expo. Techno Expo provides students and parents the opportunity to participate in problem-solving activities and math games. Each classroom displays several games that have been used to teach math concepts and skills. Students demonstrate the activity to their parents and work cooperatively to

complete the task. Some of the games challenge the participants to use calculators to solve tic-tac-toe, toothpicks to create puzzles, and computers to create math equations. The business partner, CH2M Hill, was also involved in problem solving activities. A design brief, describing the story of the "Three Billy Goats Gruff," challenged these adults to design and build a safe way for the billy goats to get to the meadow. (See illustration). The designers thus began a four-step design solution which included: defining the problem, brainstorming for ideas, evaluating the ideas, and designing the best idea. Their solution, a raft, was then built and displayed at the Technology Exposition. The partners shared this model with the students. They discussed their options, the pros and cons of each solution, and problems encountered during the construction process. A kindergarten student commented, "I used rubber bands to hold my cardboard tubes together, and it worked. Did you think of using rubber bands?" Enthusiasm and comradery were shared.

In addition to the classroom activities at the Technology Exposition, seventy families were involved in creating a "Boom Town," under the direction of the art specialist. This project was housed in the gym. Each family was challenged to choose a building in their community, and construct it using materials that had been brought from home. Residential and commercial areas were chosen and responsibilities were agreed upon. Families worked together for two hours to choose appropriate materials, build their model, and place it "on the street" for display. All of the systems in a city were considered. The construction process included characteristics such as placement of transportation and communication technology, housing units, environmental factors, and more.

The Technology Exposition, or a similar activity, is held each year to give the parents and public an opportunity to review the school's technology activities. Dranesville has held an Invention Convention with over 800 students registering patents as a part of their learning experience. Other activities have included a school-wide recycling program launched in conjunction with an environmental or engineering school/business partner. This recycling activity has allowed the firm's engineers to create a teaching display on "How Paper is Made," illustrate design briefs, and work with the students on inventions to save the environment. In return, Dranesville faculty have shared their expertise on learning

The Grass is Always Greener!

from Dranesville Elementary

The three Billy Goats Gruff want to get some fresh green grass to eat for their dinner. They see some delicious grass in the next meadow. However, they cannot easily get to this meadow because a wicked troll lives under the bridge.

Please design and build a safe way for the three Billy Goats Gruff to get to the new meadow. They will not have to meet the troll if they can think of another way to get to the new meadow.

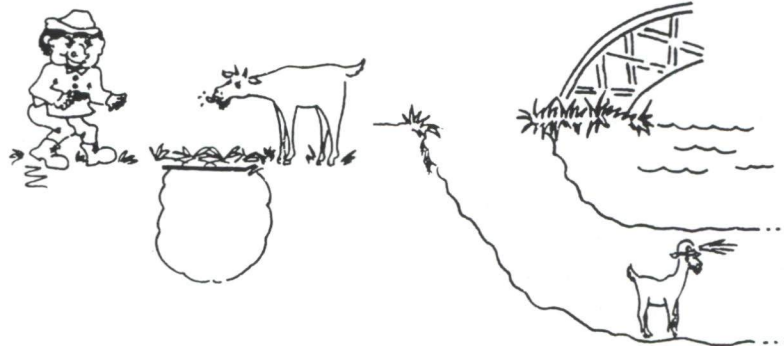
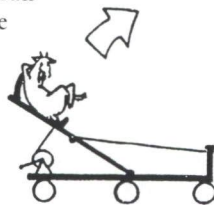
1. Define the Problem:

Help the three Billy Goats Gruff cross the river safely.

2. Brainstorm for Ideas:

Think of ways to help the Billy Goats Gruff cross the river. Here are five ideas:

- Mobile Goat Launcher
- Raft/Boat
- Tunnel
- Troll Trap
- Balloons



3. Evaluate the Different Ideas:

Think of the good and bad points for each idea on the basis of on the following criteria:

Feasibility—"Can this idea be executed?"

Cost—"Can this idea be executed for a reasonable cost?"

Practicality—"Will this idea really work?"

Reliability—"Can we trust this idea to work?"

The idea with the most good points and fewest bad points is generally the best idea.

Criteria	Idea	Mobile Goat Launcher	Raft/Boat	Tunnel	Troll Trap	Balloons
Feasibility "Can this idea be executed?"	No	Yes	Yes	Yes	Yes	Yes
Cost "Can this idea be executed for a reasonable cost?"	No	Yes	No	Yes	Yes	Yes
Practicality "Will this idea really work?"	No	Yes	Yes	Yes	Yes	No
Reliability "Can we trust this idea to work?"	No	Yes	No	No	No	No

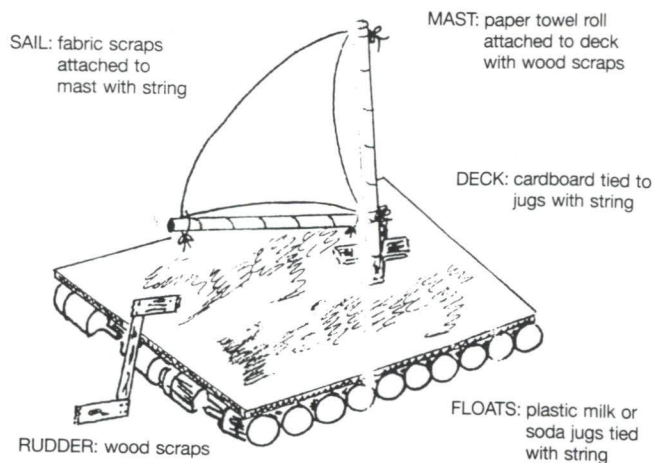


4. Design the Best Idea:

Choose the best idea from the evaluation and design all the details. During design, the following things should be considered:

- What materials should be used?
- How will the material be connected?
- Will this be easy to build?

Part of the design should be a drawing showing all the details.



styles. The students have demonstrated their skills to the industrial partners.

The school has also been a field test site for NASA's Mission 21 Project which was designed to implement aerospace technology activities. These activities include topics such as space colonization and manufacturing, creativity and more. The results of the project are now available through Delmar Publishing Company. This experience went along with NASA's belief that "the analysis of technological issues and trends can prepare children to deal with the problems and solutions of the 21st century."

It is said that Thomas Edison conducted more than 50,000 experiments before finally developing a simple storage battery. As educators we don't have the luxury of time to experiment like Edison, but as

Dranesville has implemented technology activities, it has been done slowly, experimenting with manipulatives, CD-ROM technology, and other problem-solving activities. Care has been taken to maximize every learning opportunity while achieving implementation with as little additional work as possible for the teachers.

Dranesville has been fortunate to have as much technology available as it does for student use. However, a majority of the activities utilize equipment and materials already found in the average school. What is required is a desire to work on technologically oriented projects with problem-solving, hands-on activities.

During the coming year, many more design briefs, educational equipment and teaching strategies will be a part of the

educational program at Dranesville. Striving for excellence is a school goal. This goal has resulted in many successes to date. Much work remains to be completed, in spite of all the progress that has been made. Preparing elementary students for the technological world in which they will live is not an easy task. However, the teachers at Dranesville Elementary School are making a determined effort to give their students as many opportunities as possible, so they are prepared for Technology-Year 2000.

Photos by Carol Van Dyke

Gioia Caiola Forman is the Principal, and Cindy Etchison is the Technology Education Resource Specialist, at Dranesville Elementary. This was an invited article.

"Document Control"

TYPE: MEETING REQUEST DOCUMENT NUMBER: 9201922
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS

FROM: LOHMANN, Jack R. and STACY, Angelica M.: AMERICA'S ACADEMIC
FUTURE

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 05/13/92

SUBJECT: THEY REQUEST TO MEET WITH DR. BROMLEY TO DISCUSS
THEIR REPORT AND RECOMMENDATIONS FOR OSTP.

DIRECTORATE STAFF
ASSIGNED: INTERNATIONAL/POLICY ASSIGNED:

ACTION STAFF
REQUIRED: AS NECESSARY ACTION:

SENDER'S DUE DATE:
OSTP DUE DATE: 06/11/92 STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT:

COPIES TO: D. Allan Bromley

WHITE HOUSE TRACKING #: CONTACT PERSON:
REMARKS: PHONE: EXT:

OBE



OSTP RECEIVED: 05/27/92 DEPT RECEIVED:
FILE: P-EDUCATION
CENTRAL FILES:

1922

**AMERICA'S
ACADEMIC
FUTURE**

**A Report of the
Presidential Young
Investigator Colloquium
on U.S. Engineering,
Mathematics, and Science
Education for the
Year 2010 and Beyond**

Executive Committee

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May 13, 1992

Dr. D. Allan Bromley
Assistant to the President
for Science and Technology
Office of Science and Technology Policy
Washington, D.C. 20500

RECEIVED

92 MAY 27 P 3: 03

OSTP
MAIL ROOM

Dear Dr. Bromley:

Enclosed is a copy of the report *America's Academic Future* that was released recently by the National Science Foundation. This report summarizes the key issues and recommendations of the Presidential Young Investigator Colloquium on U.S. Engineering, Mathematics, and Science Education for the Year 2010. On behalf of our fellow participants, we would again like express our appreciation for your participation in the summary session at the conclusion of the colloquium.

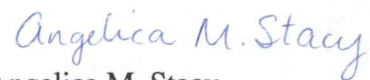
On May 1, 1992 we presented our findings to the National Science Board and we were very pleased to receive their strong support for our plans to facilitate the implementation of the principal recommendations within the report. Among our immediate tasks is to meet with a number of the principal persons and organizations that play a key role in setting the national educational policies and to share with them our thoughts and concerns about America's academic future. Among those we have met, or will soon meet, include the National Research Council, others within the National Science Foundation, and our national elected leadership. We would welcome the opportunity to meet with you and members of your staff to discuss the report and our recommendations for the Office of Science and Technology Policy.

We have formed an Executive Committee whose principal tasks are to share the report and its recommendations with others and to develop action plans to implement the report's recommendations. The Executive Committee is scheduled to meet again in Washington, D.C. on June 8, 1992 when we present our report to the National Advisory Committee for the NSF Directorate for Education and Human Resources. The Executive Committee would welcome meeting with you then, or at some other time when your schedule permits.

Sincerely,



Jack R. Lohmann
Colloquium Co-Chair



Angelica M. Stacy
Colloquium Co-Chair

Enclosure

cc: Executive Committee

America's Academic Future:
*A Report of the Presidential Young Investigator Colloquium on
U.S. Engineering, Mathematics, and Science Education
for the Year 2010 and Beyond*

National Science Foundation
Washington, D.C.
February 20, 1992

Press conference remarks by

Dr. Walter E. Massey
Director, National Science Foundation

Good morning. I would like to thank everyone for coming. I am Walter Massey, Director of the National Science Foundation. With me to answer your questions and provide background on this report are: Dr. Luther Williams, NSF's Assistant Director for Education and Human Resources, and Drs. Jack Lohmann and Angelica Stacy, the Presidential Young Investigators, or PYIs, who co-chaired the panel that wrote this report.

We are here today to present the report, America's Academic Future, which was written by a group of 53 PYIs -- America's most promising young scientists and engineers. This report is a much needed wake-up call to all of us who have a role in shaping the nation's research and education enterprise. It contains a thorough and thoughtful analysis of how research pressures are affecting the quality of undergraduate instruction, and it provides concrete recommendations on how to enhance the relationship between research and teaching.

Most of you already know that the PYI program will continue in 1992 as the NSF Young Investigators. Its sister program -- the Presidential Faculty Fellows -- was developed in part because of the President's desire to have a program that emphasizes the strong connection between teaching and research.

This report concludes that the current reward system in much of academia places disproportionate weight on research. It notes that teaching, instructional scholarship, and devotion to public service are weighted much less than research productivity in hiring, tenure, and promotion decisions at universities. Clearly, this is inappropriate.

In my address to the American Association for the Advancement of Science earlier this month in Chicago, I spoke of the need to restore and reinvigorate the natural linkages between research and teaching. This is especially true for recent Ph.D.s, who are now twice as likely as they were twenty years ago to report that research is their primary activity. I want to emphasize that these trends reflect self-reports from researchers on how they view their time. I raise them because they tend to reinforce the notion that much of our academic culture undervalues teaching. It is very easy to conclude -- and I fear that the public and many elected representatives have already

concluded -- that the pursuit of research and a commitment to good teaching are antithetical aims. We know that this need not be so.

Research and teaching are mutually reinforcing; the best way to learn science is by doing science. The challenge is to generate educational programs that have the spirit of research, and research programs that educate their participants. We need to foster in every faculty member the combination of subject matter, knowledge, and commitment to teaching.

Strengthening the necessary and natural ties between research and education is one of my highest priorities as NSF Director. I am inspired by the fact that this group of our finest young researchers applied their talents and insights to this issue. Here at NSF, we will incorporate their findings and recommendations into the design of our programs. Several ongoing programs, like those to reform undergraduate curricula and improve instrumentation in instructional laboratories, are already addressing some of the issues identified in this report. This report will strengthen these efforts and guide us in the long-range planning process that we have just initiated.

This report will also help us exercise leadership within the academic community. It should inspire colleges and universities to undertake a thorough evaluation of their reward system and adopt these recommendations. I think it is most reading on campuses.

Let me close my remarks by noting the insightful statement in the "Epilogue" of the report:

"The ... colloquium ... selected young faculty, mostly from research universities ... with strong interests in teaching. This a somewhat lonely group in the sense that most return to environments where many of their colleagues subordinate their teaching to research interests, and all are tempted to do so. It was, therefore, strongly encouraging to spend two intense days with colleagues attempting to articulate a vision of the future in which teaching shares with research a high priority."

Thank you. I will now turn the podium over to Dr. Williams.

National Science Foundation



Michael Fluharty
(202) 357-9498

EMBARGOED UNTIL:
6 P.M., February 19, 1992
NSF PR 92-13

NATION'S LEADING YOUNG RESEARCHERS SAY MORE EMPHASIS NEEDED ON UNDERGRADUATE TEACHING

A report prepared for the National Science Foundation (NSF) by more than 50 of the nation's top young researchers says that their future and that of the nation requires that more emphasis be placed on what they do in classrooms.

The report*, "America's Academic Future," urges colleges and universities--and federal, state, and other agencies that fund science and technology--to consider science, mathematics, and engineering instruction just as important as research when considering tenure and other academic rewards.

According to the report, issued today (February 20) by NSF, the vigorous attention afforded in recent years to pre-college education must now also be focused on instruction at the undergraduate level.

The authors believe that there is not enough support for faculty achievements in teaching, instructional scholarship, and public service, a situation they characterize as "among the most pressing problems in higher education." These conditions, they

-more-

*Copies of "America's Academic Future" are available by writing to NSF; Division of Undergraduate Science, Engineering, and Mathematics Education; Room 1210; 1800 G Street, NW; Washington, DC 20550, or by calling (202) 357-9644.



say, "mandate fundamental, comprehensive, and systemic changes in the way all of us go about the business of education."

The report was developed by 53 young faculty who received the Presidential Young Investigator (PYI) Award from 1984-89. The PYI Program continues in 1992 as the Presidential Faculty Fellows Program and the NSF Young Investigators Program.

Jack R. Lohman of the Georgia Institute of Technology and Angelica Stacy of the University of California at Berkeley, co-chairman of the PYIs who developed the report, remarked that it is significant because many of the nation's top academic researchers see teaching as a national priority.

Walter Massey, NSF director, voiced his support for the report's findings, saying he also is very concerned that unless the number of qualified American scientists and engineers and the general level of American scientific and technological literacy are increased, "we [the U.S.] could fall far behind other countries in both research and international competitiveness."

"This group represents the cream of the crop in research," according to Luther S. Williams, NSF assistant director for education and human resources. "The emphasis they place on undergraduate teaching shows that our finest young researchers are alarmed by what they see as neglect of an activity central to America's academic future. These recommendations demand serious attention."

The report, among other things, recommends that:

- o To attain and maintain scientific and technological literacy--higher education and NSF should emphasize creative, discovery-oriented, collaborative student learning at all educational levels.
- o To encourage curriculum renewal and development of new learning environments--higher education should apply tenure, promotion, and reward criteria in ways that value and encourage teaching and instructional scholarship; higher education should also develop peer-based measures of teaching quality and instructional effectiveness; and funding agencies should encourage undergraduate and precollege educational grants.
- o To incorporate new and evolving technologies into curriculum--legislation should be written to provide incentives for industry to contribute new technology for universities, colleges and K-12 classrooms, and provide support for employee involvement in and contributions to educational programs; and higher education should

assure that tenure and promotion criteria are applied to recognize and reward faculty creativity in incorporating new technology into instruction.

- o To encourage and prepare students for careers in teaching--higher education should establish significantly more endowed chairs for teaching excellence and instructional scholarship; higher education should develop prestigious teaching internships; and NSF should expand grant programs to precollege teachers and students to enable more participation in research projects at local universities.
- o To assure career participation by all societal groups--higher education and NSF should encourage more science, mathematics, and engineering faculty to work in partnership with education faculty and precollege teachers to improve the quality of college instruction and prepare better materials and instructional aids for K-12 curriculum; higher education and NSF should encourage initiatives to foster interaction between faculty in education and in technical fields; and higher education and NSF should encourage more industrial role models to teach part-time or take sabbaticals on college or university campuses.
- o To develop more young faculty prior to tenure--higher education should establish faculty career development programs based on mutually defined institutional and individual faculty goals; NSF should assure long-term, faculty-oriented support for instructional experimentation and educational innovations; NSF should provide adequate start-up resources to young faculty to initiate their research and teaching programs; and higher education should establish formal senior-junior faculty mentoring programs.

-end-

Editors: A press conference providing more detail on the report is going to be held on February 20, 1992 at 10:00 A.M. in room 543 of the National Science Foundation. Several Presidential Young Investigators involved in developing the report will participate in the briefing. NSF is located at 1800 G. Street, NW, in Washington, D.C. For more information contact Michael Fluharty, NSF Public Information Officer, at (202) 357-9498.

AMERICA'S ACADEMIC FUTURE

A Report of the Presidential Young Investigator Colloquium on U.S. Engineering, Mathematics, and Science Education for the Year 2010 and Beyond



Directorate for Education and Human Resources
National Science Foundation
January, 1992

"Document Control"

TYPE: ACTION

DOCUMENT NUMBER: 9201601

ORIGINATOR: 02

STATUS I

DIRECTORATE STATUS

FROM: CAMPBELL, Ronald B. Jr.: XEROX CORPORATION

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 04/30/92

SUBJECT: HE IS WRITING TO ASK DR. BROMLEY'S ASSISTANCE WITH
BRINGING THEIR "MAZE CRAZE" TEAM TO THE WHITE HOUSE
FOR THE AWARDS CEREMONY.

DIRECTORATE

STAFF

ASSIGNED: DIRECTOR'S OFFICE

ASSIGNED:

ACTION

STAFF

REQUIRED: AS NECESSARY

ACTION:

SENDER'S DUE DATE:

OSTP DUE DATE: 05/14/92

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

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REMARKS:

OSTP RECEIVED: 05/05/92

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FILE: P-EDUCATION

CENTRAL FILES:



Xerox Corporation
Joseph C. Wilson Center for Technology
Bldg. 105-61C
800 Phillips Road
Webster, New York 14580
(716) 422-5917

April 30, 1992
Dr. D. Allan Bromley
Science Advisor to the President
The White House
356 Old Executive Building
Office of Science and Technology Policy
Washington, DC 20500

1601
RECEIVED

92 MAY 5 AM 11:15

OSTP
MAIL ROOM

Dear Allan,

Xerox has a problem with the invitation of a subset of our team to the White House award ceremony, and I would like to ask your help.

At Xerox, in our quest for quality, we have emphasized building empowered teams. For the "Maize Craze" competition, we decided at the beginning to build a true partnership with the Wilson High School students so that they could learn about engineering by participating actively, instead of merely observing. Receiving the Chairman's Award for superior partnership demonstrates our success. Moreover, we have had a partnership with the Rochester School system for some twenty-four years now, the Science Consultants Program. This partnership was the basis for our successful participation in the competition.

To send only a portion of the team to Washington concerns the Xerox-Wilson team and all of its sponsors because it indicates a possible lack of understanding of how empowered teams work and what their benefits are. Personally, I believe that this kind of understanding is essential to the competitive success of our country because of the demonstrable productivity accomplishments of empowered teams. In our partnership with Wilson High School, the team was a self-managing and self-guided team. An extraordinarily strong sense of teamwork resulted, and the team was far more productive than ordinary groups. We were iterating electro-mechanical designs in one week.

The Xerox-Wilson team would like to be recognized, not just as having won a major award at the competition, but as a model of how industry and schools can work together to improve education in technical areas. If it could be possible for the whole team to come to the White House, I believe we all could communicate effectively a very powerful and successful way to improve education in our country. I have attached a possible statement to this effect.

I will plan to call to discuss with you. Thank you for your attention.



Ronald B. Campbell, Jr., Vice President
Technology Management

Attachment

c: Mr. Dean Kamen
Mr. David Kearns



**Proposed Statement on
Xerox / Joseph C. Wilson Magnet High School Partnership**

"Twenty-four years ago, Xerox initiated in a partnership with the Rochester City School District that has evolved into a significant model for others to emulate. Every week, Xerox scientists and engineers bring to the classroom the excitement and challenge of science and engineering. The Xerox Science Consultant program which engages elementary and middle school students with employees, teachers and parents, has become a benchmark in educational initiatives.

Building on this infrastructure, a team of 20 Xerox engineers and 20 Joseph C. Wilson Magnet High School students from Rochester, NY, won the U.S. FIRST "Chairman's Award" for superior partnership. I am delighted to recognize the accomplishments of this team for demonstrating the productivity of teamwork and in setting new standards for leading high school students to appreciate engineering as fun, exciting and rewarding."

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01. Memorandum	To: Kathy Super From: Allan Bromley Re: US First Competition (1 pp.)	5/7/92	(b)(6)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: Education Files
WHORM Cat.:
File Location: Education: General [2 of 4] [1992]

Date Closed:	5/21/2010	OA/ID Number:	62032-004
FOIA/SYS Case #:	2005-0336-F	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
P-2/P-5 Review Case #:		Disposition Date:	
AR Case #:		MR Case #:	
AR Disposition:		MR Disposition:	
AR Disposition Date:		MR Disposition Date:	

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P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

THE WHITE HOUSE
WASHINGTON

May 7, 1992

MEMORANDUM FOR KATHY SUPER

FROM: D. ALLAN BROMLEY *Alan*
SUBJECT: THE US FIRST COMPETITION

Earlier this year the President appeared in New Hampshire at the opening of a competition, the so-called "maize craze" which was organized by an old friend of John Sununu's, Mr. Dean Kamen. Tom Ratchford and I from OSTP also attended, and I must say were enormously impressed by the level of cooperation that had been obtained between major corporations and high school groups in using standard electronic and mechanical parts provided in kit form to each group to come up with a mechanism that would pick up tennis balls from an area covered with shelled corn (hence "maize craze"). This may sound a little strange but it generated an enormous amount of school spirit, of good clean competition and, most importantly, gave a lot of high school kids from all over the country the opportunity to interact on a very close personal basis with some of the outstanding engineers in some of the major corporations in the area.

In his remarks to the group in its opening session, President Bush invited the winners to come to the White House and this was captured on TV and shown frequently throughout the event, so the President is very definitely on public record as having invited the winning team to the White House.

Kamen is continuing his work and for next year has lined up companies all across the United States and will be running regional competitions. Quite frankly he is the only person that I have encountered in this whole education field who has actually made things like this happen, who has liberated private sector support, and who has created an enormous amount of enthusiasm that will unquestionably bring young people into science and technology when they finish high school, something that the Nation badly needs.

(b)(6)

In any event, the winning school is the Clinton High School, not a particularly fortunate name at the present moment, but that is what emerged, and so they clearly should be invited to come to the White House. There are roughly six members in the team, I believe, and it would be, in my opinion, appropriate to invite Dean Kamen, the organizer of this whole venture as well as the faculty sponsor of the entire activity, a professor at MIT.

Beyond that, what Dean Kamen suggested to whomever he talked was that the corporate group that had far exceeded all others in terms of the amount of effort that they put into working with the high school kids was the Xerox Corporation. Xerox worked with the Wilson Magnet High School in Rochester, New York and, because of this, Xerox won the so-called Chairman's Award which is the most prestigious in this particular competition. They are now arguing that representatives from the Xerox engineering group that worked with the Wilson School kids and the Wilson School team itself, should also be invited to the White House.

I hate to bother you with this sort of nonsense but the publicity associated with this event was very large and will continue to grow in the years ahead. This is something that clearly is important to the President in his role as the Education President.

I am enclosing herewith the letter from Ronald B. Campbell of Xerox making his case and I would recommend that, if at all possible, we arrange to invite the Wilson team, the Clinton team, together with two or three of the sponsoring engineers in each case, as well as Den Kamen and the MIT professor whom I believe is called Woodley, for a total somewhere around 20. All that would be required would be a photo op of this group with the President to 2take care of the commitment that he made when he was in New Hampshire.

Enclosure

Xerox Corporation
Joseph C. Wilson Center for Technology
Bldg. 105-61C
800 Phillips Road
Webster, New York 14580
(716) 422-5917

April 30, 1992
Dr. D. Allan Bromley
Science Advisor to the President
The White House
356 Old Executive Building
Office of Science and Technology Policy
Washington, DC 20500

Dear Allan,

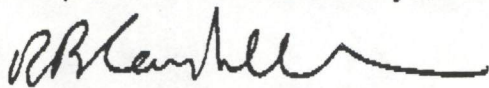
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Ronald B. Campbell, Jr., Vice President
Technology Management

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c: Mr. Dean Kamen
Mr. David Kearns



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